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157

JAMES WILSON
BOOKSELLER,
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MAN
ESSAY

CONCERNING
The Body of MAN,

WHEREIN
Its Changes or Diseases are
consider'd,

AND THE
OPERATIONS
OF
MEDICINES
Observ'd.

By P. PAXTON, M. D.

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22



The PREFACE.

WHosoever will but carefully peruse Ancient or Modern Treatises concerning Diseases, may, if he pleases to compare such, easily discern marvellous differences and disagreements between several of them: Not only in their Theories, but also in their Prescriptions, Methods and Intentions of Cure. It is superfluous to produce Instances to confirm so notorious a Truth, there being perhaps but a few, if indeed any amongst that mighty number that afflict mankind, but may be observed to have been thus differently treated. Charity obliges me to believe that so many Learned Men, as divers by their Writings appear to be, would never by thus publishing, have recommended their Methods as fit to be pursued by Others, had they not first by a successful use of such, been well approved by themselves. Admitting then, that as true (for I cannot suspect their Integrityes) it must, as I think, necessarily follow, that either the same Diseases have been happily remedied by even contrary Measures; which methinks seems not very Consonant to Reason, or indeed to Experience, in other things. Or that notwithstanding Authors have used the same Name or Term to express a Disease, yet they have not always taken it in the same Sense, that is, they have not precisely agreed what it is that makes it; so that by unsteadily using the same Word, they

A 2

have

The Preface.

have made a different Language in it. This, I am apprehensive, may appear to some both trifling and strange, and yet if such will be pleased to consider what they may observe in the Writings of some eminent Men, how that they do not accord in the Pathognomonick sign of some of the most common Diseases, they may soon perceive what I have thus hinted, is not altogether unlikely, for such it is certain cannot consent in the full signification although they do in the use of the same Word.

That which has occasioned these uncertainties in such excellent Discourses, may, I presume, be derived from some of these Reasons, first, in that they have considered that disordered state of a humane Body, which is comprehended under that general word Disease, as fit to be branched and divided into some certain distinct Families, Sorts, or, if you please, Species, and by that means easily, perhaps, supposing such to have certain and real Essences, and so seem not to have been solicitous precisely to ascertain what Signs or Symptoms must only coexist to constitute such a particular kind. Secondly, In that in assigning the Causes, or explaining the Natures of Diseases, they often appear to have used doubtful, unproved or controverted Principles, which is evident in that they are so different, and have been so often disputed. Thus the Doctrine of the Schools was in chieftest use until declining in its esteem, it gradually yielded place to that of the Chymists, to Acids and Salts, to Fermentation and such like. Now as these have had their Defenders and Followers, it is but a natural Consequence that Prescriptions, Methods and Intentions of Cure, must by these several Sects or Parties, be altered and varied.

Thirdly,

The Preface.

Thirdly, besides these, they seem not in the use of Medicine to have been very wary in observing what are their certain and regular Operations, that is, what they actually perform in our Bodies, but principally, if not only, have heeded what success hath ensued upon their use, which perhaps has been but an accidental Effect proceeding from their real Operation. By which means the same Medicine, hath undergone different fates, in the same Disease, so far as to be commended and applauded by some, and condemned and exploded by Others.

By such means it is probable the noble and useful Art of Physick hath unhappily gained that ignominious Character of being called uncertain, or at best conjectural: Neither hath there been as I apprehend, any Remedy as yet discovered whereby to remove this reproach; for what judicious and unprejudiced Man but must look upon it as very precarious, when its Professors so much disagree in the most material parts of it.

These Considerations have induced me to attempt a Remedy for these inconveniencies, by endeavouring to shew the full extent of our knowledge in the Natures or Causes of such disorders or Changes in our Bodies, which we call Diseases; which being once settled, and the real Operations of Medicines observed, it will not, as I conceive, be very difficult to ascertain methods for the remedying of them, that is, so far as humane skill can contribute towards it; for it is plain, Man being born to die, there must be Changes or Diseases wherein we in vain implore the help of Medicines. Now if Men in these things will but confine their Enquiries to such Matters as exceed not the comprehension of their understandings

The Preface.

standings (and how vain it is to carry them farther) there may be an end of all disputes, and if they will not stop there they may perpetually wrangle, for what can put a period to such Alterations.

In this Discourse I have only used a plain and historical Method, extending my proofs to such things only as are well known by Experience, or have the immediate Evidence of Sense, or are clear deductions from such. I must therefore forewarn the Reader, he is to expect no beauty in Language, for discourses of this nature will not well permit of it, the frequent use of so many and the same indefinite words to obviate Exceptions, the necessity of repetitions, in order to make the proofs more clear, referring to what hath been already said, or perhaps to be proved afterwards, the observing in what sense some words seem formerly to have been used, and the ascertaining their significations when they have been too loose, the difficulty of avoiding of Exotic or ill sounding Words, must perplex and incumber a Style, was it writ by a smother Pen. Besides, in this I have designedly aimed at brevity, as being in my Opinion better suited to this kind of Writing where a Conclusion may be endangered of being lost by affecting Language, when drawn from premises that lie scattered, or where deductions are long, which are not well to be avoided, where so many different things are required to be handled.

Furthermore, the mean thoughts I have justly entertained of my own Abilities deterred me from swelling this into a large Volume, that I might not too much incur the Readers displeasure, by misemploying his Time or his Money, in the reading

The Preface.

reading and buying what perhaps upon perusal he may judge worthless. This induced me to so much brevity that I am apprehensive, if hastily read, it may seem obscure, having retrenched my thoughts that I might not be too tedious. (It is true, I have once or twice descended to proofs that may seem unnecessary, which I did to obviate Objections, that others thoughts might be there made; I only intimate this, that I may not be there thought to contradict what I have here premised.) So that this small Treatise will in some Paragraphs look but like the ribs of a work, there being but few heads but might have been so confirmed or illustrated as to have swelled it to a large Bulk.

Reader,

I have here faithfully set down what I have observed Nature really does, without wresting or distorting her proceedings to the favor or prejudice of any Hypotheses, of which, if speculative, I am not ashamed to own, I have but cool thoughts, valuing them as Dreams or Romantick Tales, which ingenious Men tell of supposed Beings that never existed but in their own Brains, and from such draw Conclusions to real Existencies. But by reason the Instruments Nature uses in all her performances, are the small and imperceptible parts of Matter which being too minute to be discovered by our gross faculties, so that their manner of operating cannot be directly known to us; wherefore to express such I have only used indefinite words whereby the Action or Operation is only denoted, such as separate, part, divide, disunite, alter, change, or so forth. So likewise when I speak of the different Natures, of the parts of Matter, I often use the words unlike, disagreeable, peccant or perhaps poysonous, by
none

The Preface.

none of which is intended more than Relations of such to our Bodies, and therefore are only used to distinguish between Effects that they may be more distinctly comprehended.

I have but one thing farther to inform thee, that I have intermixed no Authorities, having industriously avoided reading any Books Penned upon this Subject, from the time I entertained any thoughts of writing this. But this not out of any Opinion I had of the excellency or strength of my own Judgment, but of the infirmity and weakness of it, not knowing how far that of great Mens might go to prejudice or prepossess mine, so that by shunning that danger, I might the more entirely refer my self to things themselves, and so the more impartially deliver what I really observ'd. If therefore somethings are here found agreeable to what hath been already writ, as I am sensible there is, they are not here inserted (be it spoken with all deference and respect to others) because they had Authorities to recommend them, but only, as I observ'd they actually agreed to the very nature of things, to which alone I had respect in their use. This I only intimate to justify my self from being any ways injurious to others, by being thought to use or misemploy their Observations or Reasons (for as for Opinions, I esteem such as too uncertain to be valued) to a sense or use very differing from what perhaps they designed them.

CON-

THE CONTENTS.

Introduction.

THe design. 1. The Body of Man a mere Machine. Life consists in Motion: two distinct sorts of it, viz. Natural and Animal. What they are. Life in the Animal. A Motion natural to Fluids. 2. Fluids lose not their natural Motion by death, but they do their progressive one, caused by the consistent parts. 3. Animal Motion two sorts, Voluntary and Vital. Somewhat more than bare Matter in us. 4. Motion made by the Spirits disordered, there is nothing in the Organs but an aptitude to be moved. 5. Medicines natural Substances, Operate by Contact, certain in their Operations, continue the same nature, regular Effects, require a power in the Agent and capacity in the Patient. 6. An objection answer'd. 7. The powers of Medicines known, a difference between their Operations, and the Effects of such.

a 8. No

The Contents.

8. No knowledge of Substances but by Experience, Medicine better known if the former distinction had been observed, a Query, multiplying them, a hinderance to it. 9. Medicines making changes by some Motion, communicate their Effects either by the Natural or Animal, shewed, 10. These things give us light into Diseases. P. 1

Sect. 1. Chap. 1.

The uncertainty of Hypotheses prove nothing how things are. 2. Mind finite shews their vanity, included in the Body, knows nothing of existency but by the Senses, proved. 3. Substances denominated from their Qualities, which are modes, no knowing what changes will succeed by speculation, Effects regular. 4. An objection answered, as to Medicines. 5. Natural Body an Aggregate of Particles, proved. 6. All Substances, either Fluid or Consistent, proved, a Fluid whose parts move. A Consistent whose parts rest and adhere. 7. All Changes by Fluids, a Vicissitude among Bodies. 8. Bodies nourish by Fluids, destroyed by them. 9. This Discourse requires not an Anatomical displaying of the Body. 10. Different Fluids in a humane Body, shewed. 11. Fluids in our Bodies considered as common and appropriate.

The Contents.

priate. 12. Appropriate considered under several heads, consistent parts altered by the Fluids. P. 19

Chap. 2.

1. Different Fluids. 2. Bodies Fluid altho^d constituted of unlike parts, that being only their Motion by which the dissimilar are separated. 3. Fermentation nothing distinct from this Motion. 4. Relation to the Fluids in our Bodies. 5. Blood a compounded Body, proved, in what it agrees with other known Fluids. P. 42

Chap. 3.

Health better known than defined. 2. Sickness a Change from it, all Changes by Fluids. 3. A multitude of them in our Bodies, Diseases in which founded, shewed. 4. The Office of the Spirits touched at, but referred. 5. What we do or can know of the Blood whilst it is contained in our Bodies. 6. A twofold Motion in it farther proved. 7. The Blood in what state when in health. P. 51

Chap. 4.

Internal Constitution of the Blood unknown. 2. Diseases known by the Symptoms ranked into sorts, not determined what consti-

The Contents.

tates them, hence uncertain. 3. Uncertainty to such as relate to the whole Body, new Diseases made, Instances. 4. Adjusted to forms of Philosophy. 5. Denominated from a part not always certain. 6. Antiquity out-done. 7. Information of the Diseased uncertain. 8. Of Pain. 9. Separations how depend upon the two Motions. 10. The Circulation may be altered by some irritation upon the Organ. 11. Separation natural and unnatural. 12. Recapitulation. P. 62

Chap. 5.

1. Changes in the Blood discovered but two ways. 2. Diseases distinguished. 3. An accute Disease a sudden Change, if in the Blood a Fever, this word loosely used. 4. No regard to Causes. 5. Ignorant of them except the conjunct. 6. Continued Fevers considered of two sorts, in the one the Blood moves violently, in the other languidly, in the first little Separation, in the last much. 7. Recapitulation. P. 80

Chap. 6.

1. The extent of our knowledge in relation to the Blood. 2. All Medicines as either they Evacuate or Alter, such as Evacuate
again

The Contents.

again distinguished. 3. Such to be adjusted to Indications, great caution in them. and why, Medicines relate in our Bodies. 4. Evacuations suppose somewhat hurtful, the Symptoms to guide in use and choice of them, Bleeding only where no separation. 5. The separating peccant Matter an act purely natural. 6. The use of Vomits. 7. When there appears no Separation, no Evacuations useful but Bleeding, no regard to be had to the part affected, but only to the Blood, 8. What Expectoration is, the use of Pectorals, to help separation, but not to discharge, proved. 9. Blood moving violently, only Bleeding to be adjusted. Recapitulation. P. 93

Chap. 7.

Fevers where the separations are rather increased. 2. Separations indicate other Evacuations, but not Bleeding. 3. A farther division and consideration of Evacuations. 4. Those that are Organically performed certain, others not, shewed. 5. Purging a violent Motion of the Bowels, more discharged than contained in them, yet all brought in by that Motion, proved. 6. The uncertainty of Diaphoretics and Diuretics, a distinction between what promotes

The Contents.

and enlarges Urine, and what only passes that way. 7. Few Medicines that will cause sweat, unless assisted by outward warmth. 8. Indications to determine us in Evacuations, particular ones useful when the Blood separates. 9. Evacuations not always of an Advantage, farther of Diuretics and Diaphoretics. 10. Of unforced sweats, three generally sorts of them. 11. What they are. 12. Forced sweats only of benefit when the Blood is disposed to exterminate peccant Matter that way. 13. Of Blistering, how it is performed, its so promiscuous use in Fevers trifling, proved. 14. A farther consideration of Evacuations. 15. That it is not the consideration of the beginning, state or declination of a Disease, that should determine us in such, but the Separations, the reasons why they ordinarily are of most use in the beginning or declination. 16. Separation an act purely natural, proved. 17. In what Cases recourse should be had to Alteratives. 18. Symptomatical Separations not to be encouraged, nor always suppressed, and why. 19. The true use of Pearl, Coral, and such like. 20. Of Alexipharmacks, two sorts, what they are, and their uses. Recapitulation. P. III

The Contents.

Chap. 8.

The use of Vomits in the beginning of Fevers not always safe. 2. In what Cases good. 3. To judge rightly of their use, necessary to consider their Operation, what they can do, Vomiting but an Effect of an inverted Motion of the stomach, therefore Organical, what parts affected by it. 4. What properly require it. 5. Cathartics begin where Emetics end, Purging is a Motion of the Bowels downwards. 6. What it can discharge. 7. These Evacuations in most use, and certain, being Organically performed. 8. Yet give place to Salivations as more powerful, because lasting. P. 149

Chap. 9.

No certain and safe Remedy to extinguish a sudden and continued Fever, yet a certain one in Intermittents, what is meant by Specificks, the Cortex not the only one. 3. The reasons that have mounted that drug to such a height of Reputation. 4. But one certain effect of it, which is keeping the Blood from shifting and changing

a 4

The Contents.

ing its state, proved. 5. No Alterative but Operates in the Blood, or upon the Spirits. 6. The virtues of the Cortex consist in the right administration of it, other Specificks, Instances. 7. Cortex best in its native dress, Injured by Preparations, and the reasons. Chymical Preparations extremely differ in their sensible qualities, and in their Operations from those Substances from whence they were extracted, no knowing the virtues of such but by trying them. Chymistry affords several noble Remedies, yet such seem to be derived from the Preparation, and were not pre-existent in the Body, from whence they are drawn: the doctrine of Acids and Alcalies exploded. 8. Cordials only relations to our Spirits, impossible any one thing can be always so, proved. P. 162

Sect. 2. Chap. 1.

The Spirits although not to be discerned by themselves, yet known by their Effects. 2. The proper Instruments in Sensation and Organical Motion, only performed by different Motions in the one, being inward from the Organ to the Brain, the other outward from that to the part. 3. Their Motions outward of two sorts, voluntary and

The Contents.

and vital, the latter seems to flow from the Mechanism of the parts, by reason thought does not determine it, being separated from the Blood partake of its nature, hence not always fit to perform their Offices. 4. Manifest in that they do not always regularly do it, several Diseases in them denominated from their Effects, digested into heads. 5. Farther divided. 6. The Spirits cannot be directly evacuated but constantly wast, hence usually alter as the Blood does, Instances. 7. Fits from the Spirits rarely regular and periodical, some remarkable as to their beginnings. 8. Denominated from that, or else not well to be distinguished. 9. The Spirits capable of being excited into ordinary Motions three ways, and as many into extraordinary ones. 10. The reasons why Women are more incident to Fits that begin about the Abdomen, than Men. 11. The cure of Fits must be taken from the immediate cause, the quieting or hindring the Spirits in this or that Motion, very different from the altering or mending them, The first is done immediately upon them, the second only by the Blood, why some Fits are so easily cured as begin in the Abdomen, why solid things are hysterical, they regard the Womb no more than any other part. 12. Fætid Gums,

The Contents:

Gums, Castoreum, trifles when, the Fits do not begin in the trunk of the Body. P. 182

Sect. 2. Chap. 2.

We are able to quiet the Spirits. 2. Opium to be numbred amongst the greatest of Earthly Blessings. 3. A consideration of natural sleep, with the Effects, which plainly shew the Spirits are then at some rest. 4. The genuine Effect of Opium to quiet them. 5. That what else ensues by its use proceeds from that, shewed. 6. What Evacuations it hinders, and what it encreases, and the reasons. 7. Its Effects not lasting, and why. 8. Opium considered in the Small-Pox. 9. A historical survey of the Disease, its promiscuous use unsafe, proved; when and in what Cases good. 11. Opium often misapplied, and why. 12. Best in its native dress, Preparations of no use but for the conveniency of giving it. P. 203

Sect. 2. Chap. 3.

*All actions of the Spirits being only modified Motion, their disorders consist in that.
2. Vapours nothing distinct from the Spirits.*

The Contents:

rits. 3. What persons most afflicted by them, and why, their principal cause a sedentary Life. 4. The mind can only judge of things as the spirits represent them. 5. The Blood sometimes depraved because they are not employed. 7. Their remedy consists in invigorating the Blood, and why, of Steel and its real virtues. 8. Mineral Waters preferable to most of its Preparations. 9. All Methods ineffectual unless the manner of living is altered, the benefit of some drugs is lost by making them as part of our Diet, the uncharitable charge against Small-beer groundless. P. 227

Sect. 3. Chap. 1.

Diseases multiplied by being loosely described.

2. What Complications are, no more difficulties in such, than in other Cases. 3. Why Chronick Diseases considered as seated in the appropriate Juices. 4. How they are formed. 5. Every thing separated from the Blood not formally preexistent in it, proved. 6. Of Tumours, and how ranked, if contained in their own Coats, and endowed with their own proper Vessels, by which they are fed, as much a part of our selves as if born with us, and never to be destroyed but by Extirpation,

The Contents.

pation, and the reasons. 7. We need not be solicitous about their names, that Juices made by such, if received into the Blood, really taint and corrupt it. The correcting such humours trifling, unless the Tumour is rooted out. 8. Extirpation sometimes of no use, and why; what is then to be done, shewed. P.244

Sect. 3. Chap. 2.

In Chronick Diseases for the most part the Blood moves but languidly, the Circulation not to be judged of, only by the quickness, but also by the strength of the Pulse, separations usually encreased. 3. How formed. 4. Of the Jaundice, that it is some hindrance in the natural descent of the Bile. 5. The separation explained. 6. The use of such manifested by the disorders arising from the want of them, the remedy but two ways, either by removing this hindrance by the help of the adjoining parts, or by the Juice it self. 7. What difficulties this last is incumbred with, Bile not formally in the Blood, yet only to be mended by that, some Cases never to be remedied, shewed. 8. Medicines in former use in this Disease, of two sorts, either general Openers, and so were used in Cases termed Obstructions, or such as were thought to bear some Analogy to this Juice, thus yellow and bitter things in most esteem. 9. No

The Contents.

9. No known Medicine that only regards that separation, methods to be adjusted to Indications. P. 263

Sect. 3. Chap. 3.

Gout, the certain Off-spring of Luxury and Ease, what is meant by that word. 2, 3, 4. There being a perpetual change of parts in our Bodies, some going and others coming, if we receive more than can be applied to natural uses, or wasted, it must create disorders, illustrated. 5. That what we eat and drink is not always befitted for use, or to be consumed. 6. That neither Claret nor any one Liquor the cause of the Gout, proved. 7. Wines may more dispose to this Disease, than some Malt Liquors, and why. 8. Rarely afflicts Men inured to Labour. 9. A short historical view of it, with some remarks. 10. A Fit of it usually to the advantage of other parts, and why. 11. The Gout to be considered as a fit or habit, the danger of all outward Applications, proved. Opium not always safe in it. 12. The preventing it must consist in Diet and Exercise, Changes in Diet not always safe, Temperance and Exercise best, where that cannot be done what may be proper. Recapitulation. P. 278

Sect.

The Contents.

Sect. 3. Chap. 4.

Dropſie differs from Tumours, from Water.

3. Proceeds from differing cauſes. 4, 5.

The curing that not always of benefit, proved. 6. How to prevent the return.

7. Water may be diſcharged, ſhewed..P308

Sect. 3. Chap. 5.

A Conſumption how taken. 2. A part ſo far injured as to become a receptacle of putrid Juices, will be ſupplied, proved; and if not diſcharged will corrupt the Blood.

3. No conſiſtent part internally to be mended but by the Blood, the difficulty proved.

4. Affections of the conſiſtent parts conſidered under heads, corrupt Matter lodged, ſpoils the contiguous parts, and taints the Blood, the danger when upon the Lungs, ſhewed, if Corruption does not lodge the conſiſtent parts will uſually heal; unleſs in ill habits, a difference. 5. Corruption may

be diſcharged from moſt parts, but not from the Lungs, and why, Coughing can but part of it, proved. 7. Farther Conſideration of Pus, Gonorrhœa, what makes difficulty in the Cure. 8. A corrupted

Lungs

The Contents.

Lungs never remedied, an enquiry into the reasonableness of the usual Methods, Pectorals and Balsamicks, trifles. 10. Of Asses Milk and that Tribe, they do not heat the Blood, of cooling Medicines, in what cooling the Blood consists, a question whether any such, what they are, proved. 11. Milks rarely encrease heat, of nourishment, Blood moves rapidly, cannot nourish, but will wast the consistent parts, proved; that the Blood if heated, will cool, that is, despume, or againseparate, if not continued by some permanent cause. 12. Life may be prolonged, by what means, another Method proposed, more grateful to most. 13. Of a Cough how caused, and how to be remedied. P. 317

Sect. 3 Chap. 6.

Salivation, how performed, the most lasting of all Evacuations, and therefore the most powerful, that it is nothing but the Blood disordered by Mercury, purges it self by the Salival Glands, proved, that where it is of advantage the success must be according to the degrees of it, and therefore matters not how raised, no secrets in Mercury. P. 381

Er-

ERRATA.

PAge 3 l. 26. r. *our*. p. 12. l. 19. for *but then*, r. *yet*. l. 22. r. *conclude*. p. 13. l. 24. r. *experience*. p. 27. l. 24. r. *all created*. p. 30. l. 17. r. *the things*. p. 42. l. 19. r. *the parts*. p. 53. l. 8. r. *fluid*. p. 59. l. 6. for *them* r. *that*. p. 69. l. 24. r. *an Apoplexy*. p. 85 l. 6. 7. r. *insuperable*. p. 88. l. 24. r. *continued*. p. 101. l. 29. for *had* r. *are*. p. 102. l. 12. r. *Ἀρχομένον*. l. 13. 14. r. *videtur*. p. 105. l. 17. r. *Air*. p. 106. l. ult. r. *Air*. p. 108. l. 16. r. *those*. p. 111. l. 24. r. *the* p. 112. l. 25. r. *those*. p. 146. l. 16. r. *Bole*. p. 156. l. 8. r. *affected*. p. 212. l. 2. for *not as*. r. *as not*. p. 215. l. 2. for *they* r. *we*. p. 276. l. 4. r. *Anti-Ictericks*. p. 278. r. *SECT III*. p. 347. l. 5. r. *a Polypus*. p. 376. l. 12. r. *whensoever*.

T H E

Introduction.

I Have endeavoured in the following Discourse to shew what Diseases really are, in what they properly consist; and how they are produced: And as a Consequent to this, I have attempted to demonstrate how they are to be remedied; and in that, what the Powers, Virtues, or Efficacies of Medicines are, and how their Operations are mechanically performed in a humane Body. But in doing this, I strictly confine my self to a plain and historical method; and if sometimes the Nature of the Discourse necessarily leads me to some Philosophical Reasonings, which are too fine to admit of any immediate Evidence, or proof from the suffrage of Sense: I have I hope chose such uncontroverted Principles, from whence I have drawn my Conclusions, as can be denied by no Sect or Party of Men.

B

I. But

I. But in order to give some light into the ensuing Essay, I must premise that every humane Body, is but a noble Machine, curiously contrived, and divinely fashioned, out of that Mass of passive Matter common to all corporeal Beings. This I think carries its own Evidence: However, its nutrition, growth, and dissolution, the great variety of vicissitudes, and changes it daily undergoes, abundantly evince it; and God's sacred Word undeniably proves it. But this Body being made a Residence or Mansion, for something of a more excellent nature, is ordinarily with that considered, as constituting one individual Man; and thus conjointly taken may be observed to partake of some Excellencies, far transcending what is to be found in any other terrestrial Being: And it is not unlikely, that Man, that is Body and Mind, thus together considered, may have led some into great mistakes, by too hastily concluding, that all actions performed, in, or by our bodies must equally partake of the same nature, by reason they proceed from the same Man. From this reason it is probable, some Men are so Seraphick in their Opinions, as to admit of nothing in us to be performed mechanically; whilst others of more earthly minds, will have all things to be done that way. Whereas if we will but carefully heed what passes in our
selves,

selves, or what may be observed from others, we may clearly discern a mighty difference; and plainly distinguish between such as appertain to, and are really performed by our bodies only, and what proceed from a far nobler Cause: And how all such as are done by the former are but the mechanical Affections of Matter, being only certain effects of several degrees and modifications of motion, as shall be shewed hereafter.

And Life it self when considered as only in the Body, and so far as it can be comprehended by us, consists principally, if not only in that; for I suppose if we but look into our own minds what we intend by that word Life, we shall easily perceive we understand by it some perception of Motion; and by its opposite death, an absolute Cessation of it: For I think we always pronounce a Body dead, that is deprived of Life, when there is a perfect privation of all discernible Motion. Motion then being inseparable from bodily Life, and it being most certain, from what we may experience in over selves, that there are several sorts of it, in a humane body, it will not be improper to enquire in what that motion consists, that to us constitutes Life. It is manifest by the most obvious effects that succeed in dead humane bodies, that there is some motion

remains, in the constituent parts of such, (although not immediately discernible by our gross faculties) by reason they swell, purge, putrefie, and such like, all which naturally imply Motion, for no change can be conceived amongst the parts of matter, but by that. To come then to any certainty about this, it is necessary we look farther, and inspect into a humane body itself, which we shall easily discover, is a substance compounded, and made up, of very differing parts, some of which are fluid, that is, such as move, and part from each other : And others are consistent, that is such as adhere, and seem to be at rest, this is most notorious in that there is Blood and other Juices, which are Fluids ; and Flesh, Bones, and such like, which are consistent. And the small parts or particles constituting a Fluid, being always moving, as has been abundantly proved by fact, by the Honourable Mr. *Boile*, and shall be farther confirmed in this Discourse. And the Juices, that is, the Fluids in a humane body, not losing their natures, that is, the intestine motion of their minute parts, by death, as is manifest by the above observed swelling, purging and so forth ; it is evident Life doth not consist in that motion: And if not in that, it must in some motion of the consistent parts, there being nothing else in the body of Man, in which it can subsist.

II. But

II. But although the Fluids do not entirely lose their natures, that is the intestine agitations of their minute parts, by the death of the body; yet it is most evident they are by that deprived of another sort of motion, which is their progressive one; by which I understand a motion they receive by impulse from the consistent parts; which being as it were external to them, they are by virtue of that impelled and forced forward in their proper Conduits, as is most apparent in the circulation of the Blood, and the motion of some of the other Juices. So that here we have most clearly two different kinds of motion, appertaining to the Fluids, the first of which I shall call natural, as being common to all such, as well those contained in our bodies, as all others without them. The second I shall term Animal, as being only proper to a body endued with Life; and this latter perfectly depends upon some motion received from the Consistent, or Organical parts, *viz.* the Heart, Arteries or Vessels; for it is most evident it is not natural to the Fluids, by reason it determines when Life ceases: But how the motion of these organical parts by virtue of which, the progressive, or circulatory motion, is made, and so life continued, shall be explained hereafter.

III. But this animal motion, that is, that of the organical or consistent parts, is of two sorts, which I shall for distinction sake, call Voluntary and Involuntary, or rather Vital, this latter being proper to all parts, whose motions any ways contribute to the immediate continuation of Life. And this we may experience, is not within our power to regulate, so that it seems to proceed from the pure Mechanism of those parts; they being continued in that motion, by a constant influx of Spirits, which we cannot govern, so as that, *viz.* Influx is, these seem to be, unless where the Organs, that is the parts themselves, are injured, or some ways hindered: It is true this seems to admit of an exception in Respiration, which we have a power to regulate so far as is necessary to form Sounds or Articulations; but yet in this we cannot absolutely suppress breathing, which is only essential in that motion to Life. The other sort I terme the voluntary, and these are such as are immediately under the guidance, government and direction of the Mind (which word I shall beg leave to use, as perhaps being here more expressive than Soul) and these comprehend all external Muscular Motion; thus I can now write or not, I can walk or sit still; and not only so, but I can alter, change, turn about, and review my Thoughts, Conceptions or Ideas

Ideas. The consideration alone of these powers which every one may experience in himself, is to me an irrefragable Argument, that there is somewhat in us, far exceeding bare and unassisted Matter: for by these we plainly find we have an active power of beginning, altering, hindring, or suppressing motion at any time, we please; which being inconsistent with, and repugnant to the very nature of Matter, must undoubtedly prove one of these two things; either that there is somewhat in us, very different and distinct from Matter; or that some part of Matter is so divinely modified, as to become by that capable of performing effects, transcendently surpassing any power in the nature of it. And if God does thus exert his Infinite Wisdom, Power and Goodness, upon blind and passive Matter, in the formation of Man, as it is clear he does, by these Powers, we experience in our selves, then it is evident that he may by the same Omnipotency, continue a substance to the subject of this active and intelligent Power, be it either a substance distinct from Matter; or be it only Matter thus divinely refined and modified; after that Life, that depends upon the body is dissolved. And that God will do this, we have his sacred promises delivered in Holy Writ.

IV. But to return, it is evident the Mind in the performance of all motions subordinate to it, uses some nimble and active Bodies, call them spirits, or what you please, that pass the Conduits of the Nerves, as the ready messengers, or rather instruments of it, in this or that part: This appears in that, but intercept their passage, but by cutting or binding the Nerve, and all organical motion will be there lost. It is likewise evident that although the Mind hath power of beginning, continuing, or suppressing motion, in these parts, yet notwithstanding this, its power is limited and bounded, to some certain Temper, Order or continuity of Spirits; and if such become broken disordered or perplexed, these its very Instruments fall into ungovernable Motions, Tumults and Rebellions, and so cause disorderly and unnatural motions in those very parts, they should regularly actuate, and this without the knowledge, guidance, or consent of the mind; as is most notorious in Convulsions (I am not ignorant the sense of the word hath lately been carried farther, but that not being material to my design, I shall not examine how justly) by what hath been observed, it may be concluded, that the organical or consistent parts, although some of them, *viz.* the Muscles, are the certain movers in all external motions, yet even they

they are only passive in it, having none of themselves, but do, and will, remain immoveable; unless they are actuated, or have motion began in them, or communicated to them by the Spirits; for but intercept their influx, and all motion will be there perfectly lost: So that there is nothing in the Muscles, but only an aptitude to be thus moved, being exquisitely fashioned for that end; and their motions being thus derived from the Spirits must be as they are, supposing the Organs not injured, when therefore they, *viz.* the Spirits are become depraved or altered, the motions proceeding from them must be so, as is clear in fact they are by the frequent disorders to be observed in them.

V. This being premised of our Bodies, we may in the next place consider, that all Medicines, by which I understand such particular substances, that are esteemed to be endowed with a power of healing, *viz.* such things as are administered to humane bodies in order to alter, assist, or help, humane nature, when any ways grieved, oppressed, altered, or injured in its Oeconomy, are really and truly natural Bodies, or Corporeal Substances; and as such can only operate as all physical Agents do, by contact; for to say otherwise, that is, that a Body can operate where it is not, is to affirm it may be in different places at the same

same time, which is to destroy its Identity, and is utterly unconceivable to the mind of Man, being in direct terms a contradiction. Medicines then performing their operations as natural Bodies ; and not by any Magical, Supernatural, or I know not what power must proceed in such ways, as are agreeable to Matter : And of consequence act not of themselves, as thinking Intellectual Natures for an end ; that is not by deliberation, or choice, but by impulse, that is necessity : And they continuing their natures, that is, the same substances, they must necessarily have the same power, always to produce the same effects : by reason having no innate active power to change themselves, like thinking Beings, they must remain the same in respect to other bodies, until they are some ways altered from without, and then if once altered in their natures or properties, they are no longer the same, particular substances : So that if they being the *same*, do not effect the same changes ; it is not from any default in them, because they are not altered, but from the incapacity in our bodies to receive then such effects from them. Thus may we observe in all other corporeal Beings, that there is not only required a power in the Agent, but a disposition or capacity in the Patient, to make the effect certain and regular, for if there is not, we
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do but in vain expect them: Thus the same Sun by his benign influence, calls out of the productive Earth, Plants and Vegetables, and at another time parches, dries them up, and destroys them: And yet the Sun is not changed, but still continues the same Agent, in both these so contrary Effects; and operates in the same way, that is, darts down his warmer beams, upon the Earths Surface, by which she is only moved and warmed, and when she is succulent and moist, she is befitted for such productions; but when dusty and dry she is prepared for such destructions.

VI. But perhaps some may object, that admitting that Medicines are natural substances, and that so long as they continue the same, they must have the same power to operate upon us, and that therefore, if their operations are not regular, it must proceed from some incapacity in our bodies to receive such: Yet notwithstanding their operations being performed within us, we are thereby excluded from any knowledge of them, but as we learn from their effects; which being so often observed to be so very irregular, we must be involved in greater difficulties about such than in most other natural things. To which I think may be answered, that the same specious plea may be entered against all corporeal Agents; for
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Nature in all her Operations uses such small and imperceptible particles for her Instruments in them, that by reason of their minuteness are not to be discovered: And most of her workings are internally performed, amongst the very constituent parts of such bodies: So that even in all such we are likewise debarred of any immediate knowledge: And should we be but as unwary in making our Judgments of the capacity and disposition of other substances to receive effects from the certain power of some common Agents; as we are often in our own bodies upon the use of Medicines, we should observe their effects as inconstant and irregular as we experience them: For although it cannot be denied, but that Men are frequently deceived in the effects of Medicines; but then this seems to proceed in that they do not sufficiently inform themselves of the state of the body but too hastily concluded it the same, when perhaps it is very different.

VII. However it is evident the certain Powers and Operations of Medicines may be known, if Men will but carefully and diligently attend to them, which clearly appears in that some of them are so; for I apprehend we have as equal an assurance, that some particular Drugs will purge, that is, will solícite the Bowels into that motion we call so; and that others will
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Vomit, and so forth, as of any effect, produced by any other natural Agent : But then if Men will expect effects from them, that will not always succeed to such their regular operations, it can be no wonder if they often deceive themselves and disappoint others ; for instance, although some Medicines will undoubtedly purge, yet whether that will be to the advantage of the person to whom it is given, depends not upon that, but upon the fitness and disposition of his body, for such an operation ; for purging here is the proper effect of the Medicine, and if it hath caused that, it hath answered what should be expected from it, but whether benefit, or mischief succeeds from it, concerns not the Medicine, but the then state of his body who took it.

VIII. And since, as it shall be farther proved, we can have no knowledge of the Powers, Efficacies, Virtues or Operations of natural substances, either upon our own or other bodies ; but as we have learnt them from experiences ; we ought therefore in order truly to know such, heedfully and diligently to observe what they really of themselves perform upon us, and not mislead our selves, or others, by only attending to the benefits that but succeed to them ; and so perhaps are only the uncertain effects of their operations : And these two things if rightly considered, will
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be found of marvellous difference. And I am inclined to think had Men but carefully done this, Medicine might have made some farther progress towards Certainty than it hath arrived at. And whether that so fashionable use of so much multiplying them hath not been some hindrance to the discovery of it, I shall only offer as a consideration not unworthy the most improved Judgment: This I have often had in my own thoughts that of those large numbers, that are sometimes in use at the same time, and in the same person, Men must either aim at the same intention by them all or not; if the former, to what purpose, are they so multiplied, if the latter, why are they given; for if of contrary qualities or powers, and so of differing operations they may only hinder and destroy each other, but do little service to the diseased. But here I would not be misunderstood, as if I intended one only Medicine should be separately given, or that I condemned the use of Compositions, or that particular symptoms are not sometimes to be mitigated by proper Remedies, especially when seated in different Fluids, as shall be shewn hereafter; but I only offer it in steady and continued methods, where such a multitude of them are sometimes by intervals administered, and some of them do not seem very agreeable in their
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certain and known effects. For admitting in their justification, that a great variety of symptoms may sometimes co-exist, and that each, or at least, several of these when existing separately may have had its particular remedies: Yet all these in their very natures, being only effected by some changes or alterations in the Fluids, as shall be proved; seem only to require for their cure, the removing the immediate Cause, from whence they proceed, which in many cases is common to them all, they being only several parts thus differently affected by it.

IX. But to return what we call Medicines, being only natural substances, can only, but immediately operate where they are, and if they communicate effects, where they are not, it must be by the means of some other substances that are contiguous to them, through which some of their parts must pass, or by which, some degrees or modifications of motion must be continued, from them to the part where the effect is made: This is so bright a truth as not to be questioned, the very nature of particular substances implying it. Now there being but two general sorts of motion in a humane body, although perhaps several subordinate ones, or degrees in both, *viz.* what I have called the natural one, as being common to all fluids; and the Animal one

one, which is proper to Life, and this is the motion of the organical parts, actuated by the Spirits : All the effects then that we can conceive to be made by Medicine, must be performed by one of these two ways ; by reason, by such is intended some change, and all changes in natural bodies, necessarily require motion, and there is no other motions in a humane body, but these two recited. The first of these, *viz.* the natural motion, can never be conceived to be altered by any substance, but by the immediate admixture of its parts with the very component parts of what is thus to be altered ; by reason that consisting in the motion of the minute parts, separately considered, that is, they continually moving among themselves ; the mass that they constitute, that is, all of them collectively taken, cannot be altered, but as the particular ones are, which will therefore necessarily require such an admixture. And there being but one common passage, by which Medicines can come naturally to mingle with our Juices, that is, the Fluids, contained in our bodies, and that is by the Mouth, Stomach, and the several other narrow passages that lead into the Blood, and then such being received into that, must by virtue of its circulatory motion be there mingled, blended, and confounded together with that, and of consequence, must first
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exert their Energies there. But the other, the Animal motion, is frequently irritated, disordered, or quieted, or some ways altered, or affected, immediately from the Medicine it self, without passing this tedious course by the Blood: As is clear by the effects produced by Emetic, or Cathartic, or Sternutatory Medicines, and also by the surprising effects of some smells, some of which are experienced to suppress or hinder others, to cause or occasion Fits, and in divers other cases; for if this was not so, Sensation could not be effected as now it is. And this motion being performed by the means of the organical parts, which are consistent, that is, which cohere and are united; and yet are so divinely fashioned, as to give passage to the nimble Instruments of this motion, the Spirits: It is readily propagated to parts that are remote from that, where it was first caused or began.

X. By a due consideration of these things, which I take to be Truths, by reason they are only grounded upon Fact; or are deductions from such things as are manifest and certain, as will appear in the Discourse it self, I do apprehend it not marvellously difficult, to foresee what diseases may be remedied, that is, are within the reach of Medicine, and by what methods to be effected; and what are absolutely beyond their Power; and what are as yet uncertain,

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tain, that is, where nature hath not as yet so far declared her self, as that we can be informed how to relieve her, neither hath she so far discovered her wretched condition, whereby we may learn it is not in our power to do it. But in these things I would not be misunderstood, for I intend only the event of that Disease, and not the Life of the Person, which things if rightly weighed, will soon discover themselves to be widely different.

SECT.

S E C T I O N I.

C H A P. I.

I. **T**Here needs, methinks, no better proof of the doubtfulness and uncertainty of general Systems of Natural Philosophy, than the difference to be observed between them, for since there can be but one, either of Ancient or Modern, that can correspond to the real nature of things; and yet every one seems to be recommended as true resemblances of them; Men that will espouse one, that is, that will be so blindly lead, to assent to the truth of fact, because so taught in such speculative fictions, must, if they will but proceed carefully, even in their own way, be plunged in some difficulties in making their choice, by which to do it: By reason there being so many of them and each represented as a Copy of natural Beings, it cannot be readily determined which to confide in, when there appears so many promising pretences, unless they first examine their particular goodnesses before they assent to either: And that is not to be done, but by one of these two

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ways.

ways. First, either by the excellency of the contrivance of the System, in the Harmony, Symmetry and Agreement of it, in all its parts. Or secondly, from the examining and comparing it with things themselves by Experiments and Observations, that they may from them learn whether it really agrees with all such natural Phænomena, it is pretended to explain. If men will always judge of Discourses by the first, they will be irrecoverably lost, in a Labyrinth of uncertainties, without either Clue or Thread to guide them; for then there can be no Criterion whereby to distinguish between Fact and Fiction, Truth and Fable; for ingenious Men are rarely so unfruitful in Thought, or so barren in Invention, but that they can contrive and dress a Work with such endearing Ornaments, as are Symmetry in its parts, Grace and Beauty in its compositions, without being obliged to Copy from any real Original: So that should others pretend to try the value of the Metal by that touchstone, they may be unhappily brought to acknowledge the Metamorphosis of *Ovid*, to be as real as the Books of *Moses*; the Visions of *Quevedo* to be as true as the Revelations of *St. John*. But if by the last, then they seem of no manner of use, by reason then they appeal from the Hypothesis to the things themselves, to learn their natures, and that may be as fairly done without any

any such precarious assistance. Neither can they be from thence assured how far their beloved Opinions will correspond to the nature of other things, untill they have particularly tryed them ; for Experiments being only made upon particulars must be infinitely multiplied, if general knowledge is sought to be obtained that way, for by such, Men can safely conclude no farther than the nature of such bodies upon which it is made. It must be acknowledged some contrivers of these airy Doctrines have obliged their Readers by bringing some testimonies from things themselves, to prove their Conjectures ; but then the numbers of such Witnesses are so scanty in respect of that immense Ocean of Beings that compose this vast System, that they pretend to explain, and the choice of them so advantageously made, such only being produced that can be smoothly explicated by their principles ; and their Evidence is usually so cunningly delivered that they seem to an impartial Reason, rather to give an occasion to suspect, than any ways to confirm their Doctrines : For in such it may readily be discerned, they are more concerned to find proofs to support what they have thus contrived, or taken up as true, than sincerely by such to enquire after Truth it self : For indeed men having once (whether wantonly or unwarily, it matters not) established a firm

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belief

belief of the truth of an Hypothesis, there seems not much reason to expect they should enquire farther, unless it be that they may make it appear with the finer Grace or better Lustre. That the first Authors should be pleased with their own Chimeras seems not unnatural, for who is not fond of his own Off-spring? But that others should so willingly embrace them, and so warmly defend them, is indeed somewhat marvellous. For who could easily imagine that a rational Being could act so blindly, as thus implicitly, to assent to the conjectures of others (his Equals) being of the same humanity) without vouchsafing to examine whether they agree to what they pretend to teach, and that when they only do it, (as it is obvious some of them do) by the means of such principles as are never without a Revelation to be known. Thus Men out of a trifling distrust of their own parts, will not use them, or out of a laziness of temper will not employ them, choosing rather to be esteemed Wise or Learned, by being adorned with others Whimsies, than undergo any Labour, Fatigue or Trouble of being really so. It is true the mind of Man naturally desires knowledge, for who is not fond of knowing? And when therefore it is once convinced of its being in ignorance, it eagerly covets it, as then really

ally wanting somewhat that appertains to its Perfection ; for which reason, rather than to continue in such uneasiness, it becomes prone to be too easily satisfied, with what is but thus speciously offered. Hence it seems willing to sit down by an Hypothesis that smoothly promises a great deal of knowledge, with a very little toil, and having once thoroughly imbibed it, it readily concludes that all things really are, as they are there painted ; that is, that the orderly and stupendious workings of Omnipotency are the genuine exemplars of such wretched contrivances. This methinks is a kicking against our Maker, thus to slight our Reason, which he as a mark of his Divine Favour hath given Man, to distinguish him from the rest of the Creation, for thus implicitly to assent, where we may examine, is to make that plainly useless : Besides, it looks impious, thus to deifie a wretched Mortal, in attributing in some degree a kind of Omniscieny to him, in esteeming him able to explain the natures of created Beings, and so, to as readily sit down by his *dixit*, as if God himself had spoke it, who, on the contrary, hath declared his ways are past finding out.

II. Whereas if we will but seriously reflect upon what every thought will teach us, that our minds are finite (for we are Men and not Gods) we may soon discern

the impossibility of Man's fathoming the Wisdom of the Almighty in his wonderful contrivance of natural Beings: And every days experience may abundantly convince us that our faculties cannot discover his manner of workings, even in his most ordinary productions, it being a knowledge sufficient for our present state, that we can discern they are done, and that we can observe that there is an Order, Oeconomy and Regularity in them. For Man being a composition of Body and Mind, as appears, in that he performs Actions and Operations that are proper to each, for by the latter he perceives, he begins, alters, or hinders motion in this or that part that is subordinate to it: The former being only an instrument, and passive in it. The Mind is also contained in the Body, and seems to reside only in one particular part of it, and communicates with the others, but by help of the Nerves, as must be concluded, in that all communication may be intercepted by cutting or some ways injuring the Nerve that belongs to any part; for the Mind then can neither impart motion nor receive information from thence, all sense and motion being there lost. And natural bodies or particular substances existing without our bodies, cannot be perceived by the Mind, which is included, and does reside in ours, but as they

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operate upon, or someways affect ours, which interposes between the Mind and the Object: For which reason the mind cannot be informed of the nature, properties, or powers of such Existencies, that is, of what is without our bodies, but by the help of the Nerves or some part of it, *viz.* the body. And for this end nature hath wisely formed several Inlets, *viz.* the senses, by which the mind may perceive the operations of such substances upon us, and this is what is called sensation. So that the perception and knowledge of bodies existing without ours, must be only a Consequence of their operating upon, or affecting ours, which I think may be further proved two ways.

1. In that when any Organ of Sense is choaked up or lost, we are from thence excluded from any further perception or knowledge of such qualities that are to be known by that Sense. And such as never have had it, have no Ideas of any such; thus a Man born Blind has none of Colours.

2. In that all the qualities, properties or powers of body that we can form any Thought, Conception or Idea of, are only such as may be evidently gained by some of our senses, as will clearly appear by a particular survey of them; which I think would be superfluous to particularize.

By which may be concluded, the Mind is not capacitated to discover the natures
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of particular substances really existing without our bodies, in which it, *viz.* the Mind is contained, but as it is informed from the senses, upon which only such operating can be perceived. For although it can view its own Ideas, and so perceive their agreement or disagreement, yet it cannot from that be ascertained, that such are the real Images of Beings actually existing without it, unless such Beings then operate upon the senses, because there is no connexion in Nature, between our thoughts and such existences, the one not implying the other, so that when our Ideas are taken for resemblances of substances really existing, we can never know whether they correspond and agree with what they are taken to represent, but as we are taught from our senses: For not to meddle with the general nature of our Ideas, or their Originals, our minds being finite, and condemned to a residence in a determinate part of our bodies, *viz.* in the Brain (as may be inferred, in that there is the origin of the nerves, by whose means sensation and motion is performed, and in that whatever part is denied communication with that, becomes senseless and motionless:) our minds are excluded from any immediate commerce with external existences, but as such operate upon our senses, and are perceived from thence by the help of the Nerves, it is impossible

sible It, *viz.* the Mind, can be informed whether those its Ideas, that are taken to be Images of such Corporeal Beings, do really conform and agree with them, but as it can compare and examine such with the Originals, by the means of the senses, upon which alone they can operate in order to be perceived. So that what we know of the natures or powers of such beings, their Actions, Efficacies, or Operations, either upon our own or other bodies, is, and must be only from experience: and then all our reasonings about such if they carry any certainty with them, must be originally founded there, so that for Men to look only into their own minds, for the nature or uses of particular substances, can be but trifling; by reason by what they can infer from thence, they can only shew how things should be, had they contrived or ordered them, but not how they now are, since God hath made them.

III. Furthermore particular substances being for the most part known to us by their sensible or secondary qualities (for they can only be known by us, by what appears to us) and from them they are ranked by us into Families, Species or Sorts, and these qualities proceeding from the mechanical affections of the minute parts of matter, and their several degrees and modifications
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of motion, by which operating upon our senses, they have a power of producing such perceptions in our minds, which we call Qualities, and by reason these minute component parts of such substances that perform this, are so very small, that their size or figure, their number, order or position, their several degrees or various modifications of motion, which thus affect us, cannot be immediately perceived by us, we are readily disposed to conclude, that these our Perceptions, or Ideas, which we call qualities, are somewhat real in the substance or body it self, when it is certain, they are only modes in it, proceeding from the Texture, Order, Disposition and Motion of its imperceptible particles, by which it has a power so to affect us: For these, *viz.* such qualities may be altered or destroyed, but by changing these primary Affections of the Corpuscles, constituting such a body, in which we consider them, as has been abundantly proved, by a multitude of Experiments, respecting most qualities appertaining to any Sense. Secondary Qualities, then being produced by these minute parts of matter, which being so exceeding small, as not to be discovered by our gross faculties, it is plain we can never directly fore-know what other Powers or Effects will succeed upon any change made among them, more than what we have observed hath formerly

merly ensued by it : So that what we can know of such things can be only gleanings from Observations. Thus having constantly observed that natural bodies act regularly, we safely conclude they always will do so, and that the same cause will always produce the same effect.

IV. But perhaps it may be objected, that although this truth must be acknowledged in most natural proceedings, yet it admits of some exceptions, and particularly in Physick, where daily experience will abundantly convince us, that the same effects do not succeed the use of the same Remedy, nor the same events happen in the same disease, but that all things may be observed so uncertain as if chance alone governed. This then I shall prove that even here the operations of natural substances are certain and regular, and that if Men will but set out right, and not mislead themselves by Words in the consideration of Diseases, nor deceive others by jumbling and confounding undistinguished together, the certain and regular operations, with the but uncertain effects or benefits succeeding to such, in their observations of the true use of Medicines, they might always find them so. But that what I intend may be the better apprehended, I shall beg leave to illustrate it with a common instance. There are some preparations of Antimony, which will always
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create vomiting, which is then, what I call their regular operation, and by this sometimes a vitiated Stomach is recovered, which is but the uncertain effect of that, by reason when the Stomach is depraved from a cause, that cannot be removed by vomiting, that Medicine cannot contribute to its recovery. Now the first of these only regards the Medicine, and Experience alone teaches us what its operation is; but the second requires farther thought, in weighing and comparing the present circumstances of the diseased, and heedfully considering how far they can relate to the regular and known operation of the Medicine, and from thence judging of its use.

V. But in order to render those things to be treated of in this Discourse, the more intelligible, it will be necessary, briefly to premise, That every natural Body, or particular Substance is but an Heap, or Aggregate of small and singly imperceptible parts or particles, each of which, when considered by it self, will necessarily have some determinate size, figure, motion or rest, inseparably appertaining to its nature, as also some position in relation to others. The first part of this is proved by Experience, for take any lump or parcel of Matter, and it may be by some means or other so divided, and subdivided, that its parts singly become imperceptible. The second part is most evident from the undubitable nature of quantity.

VI. Every

VI. Every particular body must be conceived, and is always found in one or both of these two Catholic States or Conditions, *viz.* either fluid or consistent, by reason the mind of Man cannot conceive, but the parts of matter must either be in motion or at rest; and I call that a fluid, whose parts are continually moving, gliding and slipping from each other, without union or cohesion, so in respect of each other, always changing place, as I think is manifest in Water, Wine and such things, by reason they presently part and divide, if not contained and kept together by some resisting body; so likewise in that if we put any dissolvable body, as Salt or Sugar, or such like, into any such liquor, it will not only be divided into invisible parts, that is, will be dissolved by it, but will also be gradually scattered and diffused through the whole, as may be proved by the taste; and this although the vessel in which it is contained, is kept unmoved, by which it is certain the component parts must be moving. I call that a consistent body, whose parts do mutually adhere, and are united, not leaving or parting from each other, so long as it remains in that state. As for hard, soft, moist, dry, tough, brittle and such like, although we are often apt to consider them, as states of body, yet they are in reality only relations to us, thus we call a substance
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hard, that will not give place to the pressure of our fingers, or any other part of our bodies, soft, that readily will, &c. But if these are considered as qualities or conditions in the things themselves, they are only as the small constituent parts of body, are more or less moved, or at rest, or some of them moving, whilst other rest with or without union or cohesion, as will readily be perceived by any one, who will but give himself leisure impartially to consider these things.

VII. We may likewise observe a constant vicissitude and change among natural things, this or that particular substance or qualities beginning to exist, that is, some parts of pre-existent Matter, become cloathed with new qualities, and so acquire from us a new denomination, and then we say such a thing is made, generated, or *de novo* produced. And again those parts or particles thus constituting such a body, undergo another change, and then the qualities that were observed in that are altered, and then that body is said to be dissolved, or destroyed: And another by a new placing these particles is again formed. Thus natural bodies seem to move in a Circle, for instance, that which was Earth one day, is Grass the next, then the flesh of an Animal, and then perhaps moulders into its primitive Earth. Besides, we observe particular

cular Beings to grow, and encrease, that is, they receive an addition of new parts, by which their Bulks are enlarged without any alteration perceived by us, in such qualities or powers, that to us constitute them what they are, as is evident in the Animal and Vegetable Kingdom, such being esteemed of the same species when little or young, as they are when full grown. And it is certain, that an addition of new parts to such bodies, by which they grow, does necessarily imply a motion in the parts so added, or otherwise they could not now be where before they were not; and that such parts must have parted, or been removed from other parts to which before they were contiguous, and Motion without union and cohesion is what constitutes fluidity.

VIII. It is most evident then from these considerations, that every particular natural body, that receives an addition to its bulk, weight or magnitude, must have it by the means and help of a Fluid. This is most apparent amongst Animals and Vegetables, the last being immediately nourished by its Sap, the first by the Blood, or some Juice analogous to it, or separated from it; which must be performed by the adding some of its own parts, or leaving some brought by it. It is likewise most certain, that if the nourishment, growth and encrease of every particular substance

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stance is by a Fluid, then their several alterations, diminutions, decays and dissolutions, must proceed from the same cause, by reason these being changes, which necessarily imply motion and disunion of parts, which is what makes fluidity, which also is abundantly confirmed from the very things themselves, for in such changes the Fluids visibly break prison, forcing, parting and dividing from the rest; as every one may in a particular manner remark, in the corruptions, putrefactions or dissolutions of Plants and Animals. This being as I thought not improper to let us easily into the following discourse; but that I might not be burthensome to my Reader, I have only briefly and in the general touched at these things.

IX. And this being an attempt to shew what Diseases really are and how effected in a human body, so far only as they can be known to us, it will be not improper to premise somewhat farther in particular, of the constituent parts of it. But in doing this it is not my design to go about Anatomically to display the organical parts, that not being material to my present purpose: But I shall only consider it, as moulded and made of parts containing, and parts contained, or to express it in terms more agreeable to what hath been already said, into fluid and consistent parts, the former

former being always contained, or some ways kept in by the latter.

X. It may, as I apprehend, be thought superfluous to go about prolixly to prove, that there are divers Fluids in a Humane Body, always existing, and easily to be discovered in it, as well as in most other of the larger Creatures. This I take to be so bright a truth, that it requires no proof; for he that will doubt of this may with equal reason suspect whether the Sun is in our Hemisphere at noon-day, or whether there is such a Body or not; for if Men will not acquiesce in the Evidence of their Senses in such things, there can be no cure for their Scepticism: For it is as obvious, there is such things we call blood in our Veins, Saliva in our Mouths, Urine in our Bladders, Bile in our Galls, as even of the above-mentioned body.

XI. Having then an undeniable assurance of the real Existency of several Fluids in our own as well as in other Animal Bodies, our next enquiry is to examine what we know of their Natures, Effects or Uses, and under what names they are comprehended, and how to be distinguished. But that I may perform this without confusion, it will be proper first to rank them into two sorts, which for distinction sake I shall call common and appropriate, I call that a common Fluid, that

is diffused, and may be discovered, in most, if not in every part or member of the whole Body : I call that an appropriate one, that is to be found in a particular part, and so is only proper to that. Of the common Fluids we may most apparently discern two kinds: The component parts of the one, are gross, and to our Senses immediately perceptible: The parts of the other so very subtle and minute, as not of themselves to be perceived, yet easily to be known, by their stupendious Effects, Uses and Operations. The first of these is well known by the name Blood, the latter is what passes in the Nerves, which according to the received phrase of speaking I shall call Spirits. The first of these may for farther distinction be termed the primary common Fluid, it being the source from whence the second is separated, and so in Nature first, as likewise the fountain from whence all the appropriate are derived. The first of these is in a perpetual circulatory motion, being incessantly impelled through its proper Conduits, the Arteries, into the farthest and remotest parts of the body, and then by its own vessels, or some invisible passages it is received into the Veins, and by them returned to the Heart, from whence it had its impulse : so that there is not a part in the whole

whole Man where some footsteps of this crimson Gore may not be perceived. The second, although not so immediately to be by it self discovered, yet its uses are so obvious, and its effects so marvellous, that it leaves no room for doubt of its Existence. Because we find no entire Part or Member absolutely devoid of some Sense or Motion ; not the remotest surface of the whole body, but from which we perceive we feel, we are sensible of pain and have a power some way of moving, all which are demonstrative proofs, that those subtle messengers of the mind have a residence or some communication there, by reason all Sensation and Motion are performed by them, as is evident in that, by hindring their motions, or some ways stopping their passage in the Nerve, and the Mind is immediately deprived of all communication with that part, Sensation and Motion being there lost.

XII. There being so great a number of appropriate Fluids, or, if you please, particular Juices, to be met with in humane bodies ; I shall not be so tedious, the nature of this Discourse not requiring it, as singly to enumerate them, but shall only rank them under these following Heads.

First, Such as are merely excrementitious, by which I understand such Juices as being separated, are then useless and unnecessary to our bodies, which appears in that they are exterminated and discharged, some immediately by their proper *ductus's* adjoined or annexed to the secretory Vessels; and others of these are conveyed from the part where separated, and are from thence collected, deposited or received into a particular receptacle fashioned for that end, and there kept until such time as that being filled or loaded by the quantity, or by some other means irritated, it contracts, and then forces the contained liquor from thence out of the body. Of this sort is the Urine, which being secreted by the Kidneys, is repositied in the Bladder: Of the first is the sweat, or what passes by the pores of the Skin, what is excreted by the Nose, Eyes, or Ears, what is expectorated by Coughing. Of the last again is what is separated into the lower Guts, to be, with what is contained in them, expelled the body by the common passage of the *Anus*.

Under a second Head may be comprised all such as are partly excluded the body as excrementitious, and partly again returned with the Alimentary Juice, into the common fluid, from whence they were separated. Amongst these kinds are to be

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numbered the Saliva, or the Juice flowing into the Mouth, separated by the Glands seated about the Head, Neck and Throat, part of which is swallowed, with what we Eat and Drink, and part often spit out, as likewise what is secreted by the Liver, Pancreas, and all other Juices that are secreted and poured into the upper parts of the Bowels above the milky Veins; for some part of these being necessarily mingled with our ingested Aliments, must in all likelihood pass with the Chyle into the Blood, and other parts will again descend with the gross parts of our Food, through the loathsome Channels of the Guts, to be expelled with them, as may be reasonably concluded from the observed difference in Humane Excrements, according as their descents are either open or hindered.

Under a third Head may be reckoned such as so far as they appear to us are only separated, that they may be again returned into the Blood from whence they were separated; some after they have made a long and comparatively slow passage (for uses, without doubt although unknown to us) are again with fresh Juices brought back into the Fluid, from whence they were parted, as the Lympha by the conglobate Glands, which passing by the Lymphæducts, is again mixed with the Chyle: and

some again seem only separated, as far as we learn, to be immediately remixed with the Blood, as seems not improbable to be done by the Vessels constituting the Spleen.

Under a fourth Head may be accounted such as are only separated for the use of the very part where secreted. Belonging to this Head is what is contained in the Joints, the humours of the Eyes, the liquor in the Pericardium, and such like ; for as for what goes to the repair and nourishment of the consistent organical parts, I do not call that Secretion.

Under a fifth Head may be comprehended all particular Juices separated by the Organs, in either Sex subservient to Generation.

Under a sixth Head may be numbred that noble separation of Spirits, by the means of the Brain, or its appendants, by which Sensation, and Organical motion is performed, and of course, what we call Life continued.

Thus although our bodies abound in such a multitude of distinct and appropriate Juices, and all these very different in their natures and uses, and befitted for very contrary ends ; yet are they all separated from the same Blood ; the Organs formed for such Separations being so divinely contrived, and so curiously fashioned, as out of one
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common liquor to filtrate or separate so great a Variety, some very unlike, in most of their sensible qualities. And as it is from one from whence so many are derived; so it is by one only passage by which that common fluid is supplied, which is the source from whence the rest are strained, whereby to repair all the consumptions it continually sustains. For it is not only wasted by these appropriate Juices, that thus incessantly drain from it; but also out of this is repaired and encreased the consistent parts, for although they, by reason of their settled and fixed Natures, arising from the Union and Cohesion of their component parts, cannot undergo so great variety of changes, as bodies of a looser texture, yet it is certain they do suffer some alterations, in that they may be observed sometimes to consume and waste, and then again, grow and encrease. But being by nature condemned to, and settled in certain fixed and determinate places in our bodies, it is plain from that, they are incapable of receiving any additions of new parts, or any loss of old ones, but as they are brought to them, or carried from them, by some moving body, but of this hereafter.

C H A P. II.

IT being certain that a great variety of differing Fluids are continually to be found in a humane body, and having for brevities sake ranked them under some general heads, I shall first enquire what alterations or changes must naturally arise in Fluids left to their selves; and then I shall observe what do particularly happen in these.

II. In order then to the first, we must consider that the fluidity of a body does not consist in the agreement or disagreement, likeness or unlikeness of its component parts, but only in their constant intestine motion or agitation. For a Fluid may be compounded of very differing and unlike parts, as is evident in mixtures, and in all fermentative liquors; for in such bodies where some of its parts are by reason of their size, shape, motion, rest, or some other unknown cause, very unlike and disagreeing to the other that perhaps constitute the greatest part of the liquor, they must necessarily by this continued agitation be displaced and removed from amongst the others, with which they do not agree, and this must

must make some disturbance in the liquor. On the contrary a Fluid may consist of parts so very like, and so well agreeing, that this intestine motion may create no discernible disturbance amongst the parts of it: For if the component particles are uniform, there can be no ground of any disorder by such changing place. Besides what we may daily observe in the most common liquors will abundantly confirm the truth of this; for the first is most manifest by all Juices expressed from fruits, by all Juices or Infusions from Plants or their Flowers, with any addition of Sugar or such like, but may with lesser trouble, by reason of so general use of it, be taken notice of, in new Wort or Beer, Cyders, made Wines, &c. for in some of these the number, grossness or quantity of the unlike parts are so great, as to be of themselves discernible to us, whereas in many other, they are so few, or so small as not to be immediately perceptible. In these we may often even by the unassisted Eye perceive the unlike, and heterogeneous parts to be moved, rolled and tumbled about, very differently; sometimes they are cast up to the summit of the liquor, and then again protruded to the bottom. Thus will this commotion and disturbance continue, bubbling, heating, and expanding, untill the more similar and agreeing parts, have expelled
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the unlike and disagreeable. Some of them by reason of their comparative levity, are buoyed up to the top, and there form a sort of Cream or Capping, whilst others being more ponderous subside, and make a settlement in the bottom, and others perhaps fix to the sides of the containing Vessel. The second is most evidently to be observed, in some distilled waters, Spirits, Oils, and in Quicksilver, whose parts being so uniform, create no such disturbance by their motion.

III. In such Fluids that are compounded of such very unlike and disagreeing parts, that this commotion, becomes in some measure perceptible to us; is as I suppose what is usually termed its fermentation, or in plain English the working of the Liquor; and that which is but the effect of this motion, *viz.* the separation of the unlike parts, is called its despumation, or the fining the Liquor; for fermentation naturally considered in the Liquor itself, does not seem to be any thing different from the intestine motion of the parts of the Fluid, by the means of which the gross and disagreeing parts are disentangled, displaced, and gradually expelled the others, that constitute the main of the Liquor. So that it becomes more fine, that is, consists of more uniform parts; and what gives it this denomination, seems only

only to be that the exterminated parts, either immediately of themselves, or by some effects proceeding from them, become some way discovered by us. For I think we do not usually say a liquor ferments, unless the disturbances, or the effects of it are perceived : But to return and not to engage about the so uncertain signification or rather use of words, all these liquors, if in quantity, during the time of this commotion, disturbance, or if you please, fermentation, do gradually attain a very sensible degree of heat, which continues no longer than the commotion, for as that ceases and the liquor despumes it self, the heat gradually lessens, and the liquor returns to its former temper : But which is very remarkable, this Commotion may be continued, by the frequent addition of fresh liquor : And likewise that these liquors by this means thus clarified do thereby acquire very different qualities, and of consequence will have very differing effects and operations, either upon our own or other bodies, from what they had before this. And I am enclined to think from a due consideration of the certain nature of fluidity, and from observations made upon several particular bodies, that there are but few liquors, but will sooner or later undergo some change, by the means of this motion; that is, but will throw off some parts, that
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are not precisely uniform, and thereby undergo changes in their qualities : I say not all, because Quicksilver and some bodies drawn by distillation, seem to admit of an Exception. The purest water will, if kept, plainly discover some dissimilar particles lurking in its Chrystalline bosom, which before they can be entirely divorced, will so taint and stain that harmless and virgin Liquor, as to make it loathsome to the Smell, and ungrateful to the Palate : It is true these changes in Liquors consisting of most uniform parts, appear comparatively so very inconsiderable, as to pass often unobserved.

IV. It may perhaps be thought that what I have here said of the general nature of Fluids can be to little purpose, since I have already declared that the principal design of this discourse, is to enquire into the nature of Diseases, which can relate to such only that are contained in our own bodies, which are widely different in most of their qualities, not only from those I have instanced in, but from all others, that exist without an animated body. And especially when I have already proved, That we have no means whereby to learn the natures of particular Substances, but by applying our selves to such for our information. To which I answer, that although I acknowledge, we can have
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no certainty of the natures of corporeal Beings (without revelation), but as we are taught from them, who are only able to reveal their own natures; yet Analogy in some things that are without the reach of our Senses, is the only means whereby to regulate our selves: And in the present case, I have only used instances for such ends, as merely respect that part only of the nature of Fluids, which is common to all such, as are seated in our Bodies, as well as such as are without it; for as to other Qualities, Powers, Efficacies, Actions or Operations, which are many and great, wherein there appears no agreement, I pretend not by such, so much as to illustrate.

V. But the better to explain what I here intend, it will be convenient to remind my Reader, of what I have already proved, *viz.* That there is always contained in the body of Man common and appropriate Juices, and that of the first of these there is two sorts, *viz.* Blood and Spirits, and that the Blood is the source from whence not only all the Appropriate, but even the Spirits are separated. In order, then to shew that what hath been here said, is applicable to what I design, it is incumbent upon me to prove, that the Fluids within us, do in some things agree with those without us; and that the Blood
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like some of them, is compounded and made up of very differing, dissimilar and unlike parts, which will appear several ways.

1. In that it is dayly made, and continually supplied, by particular Substances, we eat and drink, which partake of very different qualities.

2. By the great variety of proper Juices separated from it.

3. By its yielding nourishment mediately or immediately to so many unlike consistent parts.

4. And certainly from the immediate consideration of it, when drawn out of its own vessels, and nakedly exposed to our Examination, for then it soon, so far discloses its nature, as to discover to the unassisted Eye, that it consists of parts that are not Uniform, or Homogeneous, by reason some of them readily part, and plainly disclose their unlike qualities, in different colours, and consistencies.

And as it is thus compounded of dissimilar parts, so it is naturally warm, and this its native heat, may be and is frequently encreased, by the intromission of disproportionate, or disagreeable Juices into it, which being so notorious, I will not instance in many. Wine and strong Liquors will heat us, if taken in quantity. And as this heat may be preternaturally encreased, by what we sometimes eat and drink,

drink, so it seems not improbable, it may be naturally conserved and continued, by a due addition of such Juices, that way: but this not exclusive to other things, as Air, and such like. Neither is it offered but as a not improbable conjecture, for of the true reason of the beginning or continuance of our vital heat, I dare not pretend to determine, because as I take it, it can never be known. And the Blood may likewise be said to Purge, fine or despumate it self, by its continually casting out, and separating some of its unlike parts, by the secretory Vessels. For although several of its separations, are of necessary and essential use, in respect of the very Being of the Animal, Life it self immediately depending upon some of them, as may be instanced in the Spirits; yet in relation to the Blood from whence they are discerned; That being considered only as a natural Body, and so of course of it self, not acting for an End, all separations from it can only proceed from some mechanical affection of it, that is, it can only divide from, or part with, by vertue of its motion, such of its parts, as are adapted to pass such vessels, which are befitted for particular ends. Besides by several of these separations only useless, unnecessary, or perhaps noxious parts are exterminated; so that the Blood is not only by these ways defæcated

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and bettered, but the whole Animal is preserved from mischiefs, that must have proceeded, by the want of them, as shall be shewed hereafter. So that the Blood agrees with other Fluids of dissimilar parts in that like some of them it heats, and like all of them, it Purges, Purifies, or Fines it self: That is, that it naturally parts, separates, or divides from some disagreeing parts by the means of the Secretory Vessels, or some other passages. But in the continuance and manner of doing this, it differs extremely, its native heat being as lasting as the Animal Life (although not always equal) and its despumation is by the secretory vessels; for not being like other liquors left to its self to proceed in its own way, by reason it is perpetually whirled about by the circulatory motion, nor not being contained in vessels capacious enough to fine it self as they do; for being thus hindered by these reasons, it can only perform it by these vessels. As to what perhaps may be made an objection by some, that heat is not essential to Life, nor to the Blood, or at least to that Juice, that is analogous to Blood, as in exsanguine Creatures, seems to me to carry no weight; for heat, if considered as a sensible quality, only bears a relation to our Senses, but if considered Physically in the Subject, is only motion, so that no Fluid
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can be absolutely cold (that is) deprived of all internal motion. Besides, we may observe several liquors to fine themselves, where there is no perception of Heat, and where they are contained but in small quantity, it is seldom felt.

C H A P. III.

HHealth, the more I consider it, the less I understand to define it, which brings into my Mind, that saying of one of the Fathers, although upon a very different occasion, *si nemo ex me querat, scio; si querenti explicare velim, nescio*; every ones experience will best inform him what it is, seldom truly valued when enjoyed, but always desired when wanted; prized then as the greatest of Blessings; valued as a Heaven here below, or an earthly Paradise; without it even Life is contemned and Death desired, because to live then is but pain, and to move is but misery.

II. Sicknes or Diseases are but the reverse to Health, and are only some unnatural Changes in the Body of Man; for when a Man is Sick, Diseased, Disordred,

in pain, or any ways ill affected, it is certain he is altered and changed from what he was in Health, not being then, as he was before; and all Changes and Alterations whether in our own, or in other Bodies, if naturally performed, are by Fluids; by reason a consistent Body as such, must unalterably remain in a settled state untill such time, as its parts are some ways displaced, disjoyned, or disunited, which must be effected by some moving Body, insinuating into it, and dividing them, and that is what we call a Fluid.

III. Now there being as I have already observed such a multiplicity of Fluids in Humane Bodies, it will be necessary in order to discover the Nature of Diseases, to observe heedfully in which they consist, and how they may be distinguished, according to the Fluids in which they are seated. But to do this we must consider that some Diseases are of so diffusive a nature, as to be discovered by disorders affecting the whole Body; and others of a narrower compass, being confined to some particular part, the former of these that appear so wide and general, seem to require a Cause as extensive, and must therefore be seated in one or both of the two common Fluids: those in a particular part to some juice unnaturally parted, separarted or left there: Or to some natural & appropriate juice changed,

changed, hindred, or stopped, in its Secretion, or expulsion out of the Body ; but of these hereafter ; for such being for the most part separations from the Blood, that being then prior in nature, seems first to require and deserve our consideration.

IV. But by reason the other common Fluids, the Spirits seem to be diffused equally throughout the whole Man, there may be some difficulty to be ascertained, from which some of these general Diseases do proceed : Unless we can first be enabled by a diligent survey of their certain and known use, to establish a Criterion, whereby to distinguish between them. To do this we must have recourse to Experience and Observations, for it is from them only, we can be informed. And by them we are plainly taught that all Natural and Preternatural Separations, the repair and nourishment of all the solid and consistent parts, all Natural and Preternatural Heat, are some ways derived from, or appertain to the Blood : And that the Spirits are the only Instruments of all Sensation and Organical Motion. These are Truths now so universally known, that I think it superfluous to go about prolixly to prove them : Wherefore I shall only briefly offer, but these two general Observations, first if the Blood be but hindred from passing into any particular part, all those above named ef-

fects which I have observed to be derived from it, will be entirely destroy'd there, and intercept but the Spirits from passing, and those two their Essential Offices, *viz.* Sensation, and Organical Motion, will be there lost: When ever we discern any change in these Effects, that are proper either to Blood, or Spirits, we may be enabled by that to conclude whether the Disease is seated in one of them only, or in both together, as shall be explained hereafter. But of the Spirits, their Offices, Functions, and Diseases, I shall speak more fully, when I come to treat particularly of them.

V. But first of the Blood, that being the Fountain, from whence the others are originally derived; and to which some Diseases that are even local, immediately owe both their birth and beings, they being only some unlike or extraneous parts, preternaturally separated or deposited there, as shall be proved. The Blood is a Fluid compound and made up, of very dissimilar and different parts, contained in its proper Vessels, and those wrapt up, preserved, defended, and kept in by the common coverings of the whole Body: And this Blood is endowed with two constant and certain Motions, as has been already proved, but shall be farther confirmed; and this Blood daily receives fresh juices, by the Mouth,
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Stomach, Milky Veins, &c. and is likewise continually separating and throwing off other juices, by the means of the Secretory Vessels, and Passages, which for brevities sake I shall sometimes call Straineries. For these reasons it becomes subject to a variety of changes; but it being included in its own proper vessels, and they contained and covered by others; we are absolutely excluded from any knowledge of such, *viz.* Changes, but as we can be informed from the differing affections of the containing and contiguous parts; which being such, as become liable to the Examination of but one of our Senses, they can disclose to that, such only of its Properties, Qualities, Effects, or Alterations, as that Sense alone is capable to receive; which being by that, *viz.* Sense we call Feeling or Touching, there can be no State, Quality, or Condition of the Blood, that can be known to us by that, but its Motions, *viz.* its Natural or Animal, and what is the effects of them, its Heat and degrees of it. For it is evident there is nothing else whilst it is in our Bodies, that can directly fall under our Examination. But then the straineries continually filtering Juice from it, *viz.* the Blood, some of which being discharged out of the Body, do immediately fall under the knowledge of some other of our Senses; so that by

observing, weighing and comparing these in the different states of a Humane Body, we can from thence learn, when they are natural and just, and when not ; that is, how they are when a Body is in perfect Health, and how they alter when Sick, or Indisposed ; and the great variety of changes they undergo, according to the nature, or degrees of the Indisposition : It is only by these two ways we can acquire any immediate knowledge of the state or condition of the Blood ; so long I understand as it is contained in our Bodies, and so long only it is the Subject of our Consideration : For as to what is obtained by the information of the Diseased, I shall shew hereafter, how little regard can safely be had to it. And in the due observing, considering, weighing and comparing, these two things, *viz.* the Motions of the Blood, discovered by our fingers, and its separations by our other Faculties ; how they are in that state we call Natural and Healthful, with how they are in an unnatural and unhealthy one, with the several circumstances attending these, consists all the knowledge we can have of the Blood, and all the Changes or Diseases seated there. I would not be misunderstood, I do not affirm it of all diseases incident to the Body of Man, but of such only as immediately relate to the Blood.

VI. But here perhaps it may not be improper to obviate an Objection that may be made, that although it hath been proved, that there is a Motion amongst the minute parts of a Fluid, and that there is such an one in the Blood it self, after the Circulation is ceased; yet it hath not been proved that there is such an one during the continuance of that. This although it bears no weight, it proving in some measure it self, yet that I may not seem to neglect it, I shall shew it directly by fact, three several ways.

First. By its Heat.

Secondly, By its inequality in separation.

And thirdly, and more immediately from the consideration of it when flowing out of its own vessels, and received into another.

The first may be proved from the undoubted Nature of Heat, which being only in the nature of things, but certain degrees of Motion, which if brisker than that of our Sensories, affect us with what we call Heat, which therefore must be amongst the consistent Particles of the Blood it self, which being so moved, can thus affect us. And the Natural and Vital Heat in an Animal Body appears seated in the Blood, for if you deprive any part of the influx of it, its heat is destroyed.

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The second may be manifestly observed by any one, who will but reflect upon what often happens in himself, how that his Secretory Vessels do not always separate equally, in proportion to what is received into the Blood, as may be collected from the great inequalities in the ordinary discharges of such Juices, as we may every day observe ; for how different in quantity is often the Urine, and how unlike in colour, smell and parts : How plentifully sometimes Chrystal slime springs from the Salival Glands, and at another time, how foul, or dry the Mouth ; what profusive Sweats, steam through the Pores, and then how parched and hot the Skin, and many such alterations. Now these marvellous differences and inequalities in Separation, do not always proceed from the nature or quality of what we take ; by reason, if they did, they must be as these are, which they often are not. Neither can they be derived from the circulatory Motion, because they do not alter as that does : Nay often when that is most vehement, and so of course the Secretory Vessels should be more plentifully supplied, and so a larger quantity of these appropriate Juices might strain through them ; yet notwithstanding they then ordinarily separate less, as is apparent in Violent Fevers, Great Heats, &c. Neither can it proceed from any fault
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or change in the Secretory Vessels themselves ; by reason these inequalities so often alter ; besides these Vessels being consistent Parts, and so only passive in Separation , they seem for the most part to remain in a condition to perform them ; for should they be once altered or injured , they could not so suddenly and so frequently be recovered, and then again, interchangeably injured. It must therefore be derived from some alteration among the minute parts of the Blood it self, whereby it becomes more or less inclined or disposed for such Separations, which must be performed by some alterations in the Degrees or Modes of Motion, the parts themselves being not otherwise altered : And this is no more than what is naturally done in all other compounded Fluids, that is, Fluids made up of differing parts, which despume and refine themselves by this intestine Motion; and often fall into different degrees of it, and thereby besit themselves for different uses : As we may observe, not to multiply Instances, that inflammable Spirits will not be drawn from unfermented, that is, unrefined Liquors.

By the third it appears, in that Blood immediately drawn out of our Veins, and left in a Vessel unmoved, will usually divide and run into several distinct parts, by which it is plain there was a Motion in them,

them, for otherwise they must have remained in that very state and order, as when received into it. This manifest Motion must either have been in it when it was running in our Veins, or else it must be acquired after it was distilled into the Vessel: But it is so far from gaining any new Motion after its Extramission, that it gradually loses what it had before, which appears in that it gradually cools, and in that some of its parts form themselves into somewhat of a consistent Body. By all which it is undeniably evident, that there is some Motion amongst the constituent parts of the Blood, distinct from that of the Circulation.

As to the other, its circulatory, progressive or Animal Motion, it being now a Truth so universally acknowledged, that to go about to prove it is to light a Candle to seek the Sun, for there is no one but is fully convinced of it. It is not my purpose to advance conjectures, by attempting to explain the Causes of those things, that can never be known, being entirely beyond the reach of our Faculties; and such I take to be the true discovering of the real Physical Cause of the beginning, and continuing our Vital Heat; but since Analogy may be a guide in such our guesses; a not improbable account, may be rendered, from this natural Motion amongst the parts of a Fluid, of the natural causes

causes of this warmth, that is so congenite and inseparable from humane Life; by comparing what is done in other Bodies by it. For this Vital Heat so far agrees with the nature of other things, that it may be intended or encreased by the intromission of some disagreeable Juices into it, as may be proved by a multitude of Instances, and therefore with parity of Reason, it is possible it may be naturally continued by such as are befitted for it; and it has been often experienced it may be lessened, and at last extinguished for want of a supply of them, and likewise be suppressed by some fault in them. And the cause of these may be as many as we can suppose the manner of Deaths, by this means to be. But it not being my design to advance Conjectures, I shall content my self in only intimating this.

VII. These things thus premised, I think it will follow, so long as the Blood in circulation is whirled about in its proper Conduits, by an equal and natural Motion to all parts of the whole Body: And so long as it is by a gentle and easie agitation of its minute parts, so disposed to supply the several vessels adapted for Separation, with their particular Juices, and all others with nourishment, so long I think the secretory vessels will perform their Offices, and the solid parts will be repaired: And so long

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as these are thus regularly performed, so long I apprehend there can be no discernible alterations in the Blood, and of consequence no disease to be observed there.

C H A P. IV.

HAVING thus taken a short and general view of the Blood, and considered it so far only as we are able by the help of our faculties to attain any knowledge of its Nature, State or Use ; and having also proved, that all we can discover of it, consists either in the Motions of it, and their effects ; or by the separations from it, and that the former of these is only by the means of the Consistent Parts, it being contained in them : And that there being nothing else that any ways appertains to it (I mean so long as it runs in our Veins, and so long only it is the Subject of our Enquiry) that can fall under the Examination of our Faculties. And therefore in a judicious weighing and comparing these, and diligently observing what effects usually attend these alterations, is what only can guide our Minds in the judging of the then State and Condition of it. For admitting it, as most certain, not only in the

the Blood, but also in all other particular substances, That there is some real internal Constitution, upon which the sensible qualities depend; which therefore may be called its real Essence, because it is from that, that it is, what it is; yet the knowledge of that not being within the reach of our Capacities; all we can know of the nature of such substances, must be from the appearing qualities: For it is by them only it can operate upon us; and if these from the same existence differently affect us, that is, are to us altered, we judge and pronounce that substance to which they belong to be so; and as from these only we know it, so from these we name it, and rank it under such a Species.

II. All then that we can discover of Diseases, that is, internal Changes in a human Body, being by some appearance, sign or symptom, for it must some way operate upon us, or we cannot perceive it, and that by which it does that, is what may be so called: So that the knowledge we have of that unnatural Change, or Disease, is by these, and therefore as by these we know it, so it must be from these we name it, that it may be remembered by our selves, and communicated to others. And by reason several Signs and Symptoms are often observed to co-exist in the same person, it hath been found expedient for the more order-

orderly treating of them, to express them by one common name, and to consider them conjointly, as constituting one particular Disease. But these not being naturally so dependant upon each other, as that the same should regularly and certainly co-exist; hath been an occasion, why it hath not been always precisely determined, which of them, or how many must go to form such a Disease. For although sometimes they seem to have agreed what is the Pathognomonic Sign of a Disease in the general, and so perhaps have denominated it from that, yet by reason, that is frequently found accompanied with many others, and those in divers persons very differing Symptoms, they have been obliged for farther distinguishing them, to branch them into several Species. Thus though the word Fever hath been taken by most to signify a Preternatural Heat, by most, I say not all, for some make it to consist in a quick Pulse, and some in neither separately, yet whether in either of them, or whether in both conjointly, it is certain Authors have in their Divisions, and Subdivisions, into the Subordinate Species, so perplexedly ranked them, that he that from their Writings will endeavour to distinguish them, will as I apprehend soon find himself involved in difficulties not to be overcome, they not always agreeing by what
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certain Sign or Mark the Species is to be known.

III. It is true, this great uncertainty seems more particularly to relate to such Diseases as were thought common to the whole Body, by which I think were formerly understood, such as were seated in the Blood and Humours, as then phrased; for as for those in the particular parts, there was not always the same reason, for in such, there was not place for so great a variety of Symptoms to associate. And from hence I imagine it is that this latter Age discovers new Diseases, that is by observing some Symptoms that have been frequently found to co-exist, they have comprised them under one common name, by which being bundled as it were and cemented together, they come to be treated as one Disease. This I take to be evident in those now so common Diseases, the one to Men, and the other to Children, *viz.* the Scurvy and Rickets. For although it doth not appear by the Writings of the Moderns, that they have been exactly nice, in enumerating or determining, which or how many Symptoms, nor whether inclusive or exclusive to others, must go to make these new Species: Yet they have but by loosely combining some, constituted Diseases that do not appear to be known to the Ancients under any one single denomination. Not
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but that these Symptoms now comprised under the Word Scurvy in Men, and those under the Term Rickets in Children did sometimes formerly co-exist, although not then expressed by a single word, and so not treated as a particular Disease.

IV. It is farther to be observed, that most Men in their Writings have adjusted their forms of Speech in such terms that were agreeable to the Learning that was then in greatest Esteem, and usually in their Reasonings endeavour to explain the nature of things, according to the principles of that Philosophy in which they have been Educated; and this usage has prevailed in Medics. Thus it is evident for some Centuries, that most of the Books writ of Diseases, were penned in such forms as were conformable to the *Peripatetick* Doctrine, which then had the honour of being publicly taught in most of the Schools in *Europe*: By which Symptoms being considered as Accidents, and as such being in, and appertaining to some Substance or Essence, and Essences being unalterable, the Disease might be the same although the Symptoms were altered; but the naked Substance or Essence not being immediately of it self to be known, they were, notwithstanding, obliged to have recourse to the Symptoms, whereby to learn the species, which being somewhat uncertain, as
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to be *adefse vel abefse sine subjecti interitu* ; it can be no wonder if they have left us in some Obscurity : And especially seeing sometimes they might observe Symptoms so very different to co-exist ; which being taken properly to appertain to distinct kinds of Diseases ; and so not having a single name to express them, they usually called the Case a Complication ; that is, the Person was then taken to labour under more than one Disease. It is true, some Mens generous pains have dispersed that Cloud of Darknes that did so universally arise by that Philosophy, yet the unlucky Effects are not fully worn out of the Minds of some Men ; for it is probable it is to this we owe that unlucky use of Receipts, which some, not unthinking Men, are so fondly wedded to, and to which so many others so obstinately adhere. And since that Philosophy has declined in that marvellous Esteem it once had, and most Men that have turned their Studies to Physick, have applied themselves to Chymistry ; forcing by that, particular Substances to pass their fiery Tryals, in order to confess their natures ; concluding, because by thus analysing them, they may be often reduced into such parts, that have some qualities common to most (although they differ in many more) that these must be first principles, out of which all Bodies were made, and into which all may be resolved. Whereas, it may be observed, that those ve-

ry Substances that being by this Art extracted from Natural Bodies, and are called their principles, *viz.* their Salt, Sulphur or Mercury, or what have been by some further enlarged to five, are so far from being the same, or indeed homogeneous, as agreeing with one another, that they are in several qualities extremely different; as is notorious by the great variety of Oils, Salts and Spirits drawn from different Bodies. Nay, not to urge how far they are from being first principles, for they may be again further analysed, and so changed into other Substances, that being endowed with differing qualities may with as much propriety be called principles as the former. But it is not my purpose particularly to enquire into these Doctrines, nor how far the Production or Extraction of one Body out of another, is a proof that it was formally pre-existent in it. But Diseases existing within us, and so not to be examined by any fiery Tortures, which is the only means whereby Bodies are analysed into these principles; it is impossible to judge of them, by those that are not to be known, untill thus divided; and are not to be divided so long as they can be of any use for that end to be known: So that to ascribe Diseases to the predominancy of this or that unknown principle, can contribute but little to the discovery of the knowledge of them. There hath been advanced another Doctrine of
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much a narrower compass than either of the former, by which Men have endeavoured to explain the nature of Diseases by sensible qualities, feigning Acids and Alkali's, to be the principal Instruments of all changes in Humane Bodies, but these being relations to our Senses, if they should formally exist in our bloods, yet are not to be discovered there. But of this hereafter.

V. But to return, Those very Diseases that have been ascribed to a particular Organical part, and so as it may be thought not incident to so many uncertainties, will, if impartially considered, not always be found exempt from them; for altho' some of these are denominated from the very part affected, as what by the *Greeks* is called *Pleuritis*, *Arthritis*, and such like, yet it is plain every pain of the side is not taken for a *Pleurisie*, nor every one of the Joints for the *Gout*; so that it is evident there is somewhat more taken in to constitute these very Diseases. Again, some Diseases are named from the violence or manner of seizure, as *Apoplexia*, *Epilepsia*, and such like, yet every loss of sense and voluntary motion is not Apoplexy, nor every loss of sense, but not motion, is not an *Epilepsie*. Some again, from their manner of affecting, as Rheumatisms; yet all pains with Fluxion will not be allowed Rheumatisms, that is, Men will not pursue the same methods in cure. But these instances are sufficient

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cient to give us some light, that even in these Diseases, Men are not always fully agreed what it is that really constitutes them. And it will clearly appear to any unprejudiced Man that will but diligently weigh these things, that ordinarily when the Enquiry is about the Disease; there is no more required by it, than the *Greek*, or perhaps sometimes the *Latin* word signifying a principal Symptom, the part affected, the manner of affecting, or what hath been taken for the efficient Cause; by the hearing of which name we are not advanced one tittle in the knowledge of the nature of the Disease, or its Remedy; yet that being heard, Men seem satisfied, so easily are most pleased with Exotic or Hard Words.

VI. There is one thing wherein this Age does seem to out-doe Antiquity, and that is, in that Diseases that are specificated from the part affected, are by an unheard of impropriety of speech transferr'd to others; for example, how frequently do Men say the Gout in the Head, Stomach, and so forth. Now the *English* word *Gout* being taken to answer to the *Greek Arthritis*, which implies an affection of the Joints; to express then this in plain *English*, we must say, the Joints are affected in the Head, Stomach, &c. We may with equal propriety say, the Stone of the Bladder in the Head; and so of others, as the Cholic in the Stomach. It is true, this al-

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ters not the nature of things, but it destroys the very end of Language, thus wantonly and unnecessarily to use words in such opposite significations; and may often mislead unexperienced Men, who are too apt to be govern'd by them.

VII. But to return to the Blood, from whence this digression of the common received Opinions of Diseases and their Causes have led me; It hath been proved that it is a Fluid, compounded of very different and unlike parts, that it is constantly moving, hourly separating, and daily receiving fresh supplies: But as to any of its properties, powers, secondary or sensible qualities, it being so included in the consistent Organical parts, that it cannot immediately operate upon us; we must, as I suppose, without revelation, forever remain in a settled ignorance. But there being several Symptoms complained of in the Body of Man, that seem to be derived from some change in the Blood, which cannot be discovered, by either of the two formerly mentioned ways, I mean its motions, or its separations: It will behove me to examine what they are, and how they can be affected; for these consisting in such affections as are not outwardly to be discovered by us, can be only learnt from the information of the Diseased; and may, as I think, be comprehended under what we call either Pains, Sicknes, Uneasiness, Faintings or Weakness,

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and their several degrees; these I take to be the principal Symptoms that may be some way caused by the Blood, and can only be taken from the mouth of the affected Person. And in truth, if we will but seriously weigh what these are, we may soon discover how little his informations can contribute to our knowledge of the nature of Diseases, because he cannot tell others what he knows not himself, and how little the Mind knows of what passes among the Juices of its own Body, I leave to every One's Experience to examine: For how can the Mind by the Organs of Speech declare to others what it cannot perceive it self, and the Blood of it self being insensible, the Mind cannot be any ways affected by it, but as it operates upon, or some ways affects, its Organs or Instruments of Sensation.

VIII. But in order to set our selves in a clear light, as to these matters, I shall particularly enquire into the nature of Pain, but to do this rightly, we must distinguish between the cause of Pain, and the sense of Pain; the first is oftentimes without us, but the last always within us. An outward force violently affecting any part of our Bodies, causes or gives an occasion of Pain, but it is the perception of it by the Mind, that really makes it; this is evident, in that but prevent any Communication between the Mind, and any particular part of our Bodies, and all
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sense of Pain in that part will be absolutely lost. Besides the thing proves it self, for how can I complain of what I do not feel or perceive, and how can I perceive but by my Mind; perception being its proper Act? But Pain is not always caused from without us, but sometimes from a cause that is internal in respect to our Bodies, although perhaps external in respect to the Organs of Sensation, as is miserably experienced by those that have a Stone in the Bladder, Kidneys, or so forth, which cannot be contained in the Organs of Sense. Pain then, or which is the same thing, the perception of Pain is only in the Mind, although the cause is in another part: And the Mind being some ways unnaturally affected by the means of the Organs of Sensation, from that cause, the Pains seem felt where the cause is. But the better to confirm and illustrate this, I shall beg leave to give an instance of a Case that has been taken notice of in several, under the same Circumstances by Learned Men. An aged Gentleman, who had been frequently afflicted with the Gout, or with Pain in his Feet and Toes, was necessitated, by reason of Mortification, to suffer an Amputation of his Leg, afterwards he would at certain times make lamentable complaints of Pains in this or that part of his dismembered Foot. No Man, I suppose, will be so devoid of reason as to affirm he actually had Pain
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in his dissevered Limb, that being long since lopped off and perished, and yet this Gentleman had Pain, or, which is the same thing, the perception of Pain, as there. This I take to be a full proof, that Pain was there only in the Mind, because there then was no such part appertaining to the Body, that was then taken to be so. But to return, The Mind by perceiving Pain caused from any part of the Body, does not thereby get any knowledge of the nature or properties of that Substance that thus causes Pain; as is undeniably evident in the Stone of the Bladder, Gout, or any other thing; for the Mind even in these greatest sufferings, is not able thereby to discover any thing of what causes Pain, it cannot distinguish whether it is one or more, rough or smooth, soft or hard, solid or fluid, and yet it can discern a difference not only in the degrees, but in the very kinds of Pains. By which it appears we have Organs that have a sense of Pain, where we have none of touching, by which I understand a power of distinguishing between the surface of Bodies as whether hard or soft, rough or smooth, and so forth. For that seems not to reach beyond the very surface of our Bodies, and so is only Cutaneous; and therefore seems a sense as distinct from that of Pain, as it is from that of tasting. The same reasoning I have used for Pain, will also account for Sickness, Uneasiness, and the rest, for all these

these being only perceptions, the Mind is not informed from them of the nature of the Causes ; but being thus unusually affected by the Organs of Sensation, it must conclude there is some cause that now creates them, but what that is, it wants Faculties to discover. By what hath been said it may be concluded, that we can know nothing of the Nature, Properties, secondary or sensible Qualities of the Blood, or of any separations from it, made and lodged in the Body, by any information from others, or by any view taken by ourselves, of what is made or performed in our own Bodies.

IX. I shall proceed now to examine what we can in particular know by its motions and its separations. The motions, as I have proved, are twofold, the one of which is purely natural, as being common to all fluids : It is not my business to enquire into the causes of this, it being sufficient to my purpose that it is so ; by the means of this, if left to it self undisturbed, it will part and divide into such parts as seem agreeable amongst themselves, although unlike to each other, as is manifest when detracted out of our Veins, it gradually runs into serum, and more consistent parts. The other is its Circulatory or Animal motion, in which it seems only passive, being impelled and drove about the Body by the motions of the heart and vessels and this it is probable is what preserves it in
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its genuine Mixture and Crasis; by reason when it is removed out of the power of this, it soon breaks, parts and divides, the similar and agreeable parts herding and associating together, by virtue of their own natural motion: Whereas by this, it is hindered from so dividing. For it is observable that with the more violence it runs in its own Conduits, the less, and more confused the regular separations are: And on the contrary the slower its progressive motion is, (as may be collected from the slow and faint or small Pulsations) the more apt it seems to break and part, and the separations are usually proportionably increased. However this I think every one may by experience learn that there is a sort of harmony, consent or agreement between these two Motions, they mutually depending upon each other, for the Animal or Circulatory motion is intended by the natural one, as appears in that the Pulse will be affected by any commotion in the Blood, and may be observed to be increased upon the admission of the Alimentary Juices into it: and the natural must be constantly affected by the Animal one, as being disturbed by its continued progression.

X. But by reason the circulation of the Blood is performed by an impulse it receives from the Organical parts, *viz.* Heart and Arteries, whose Motions are not under the guidance or government of the Mind, it may

may perhaps be suspected by some, that such are incapable of being solicited into unnatural motions, by reason they can perceive nothing of such an irritation ; besides, they seeming to depend upon the Mechanism or Disposition of the part, actuated only by constant influx of Spirits, they must be as that is. I will shew therefore by undeniable matter of fact ; they are first, in the general, it is notorious by Purging and Vomiting, where the irritation is certain from the Medicine, which is not perceived unless it gives pains. Secondly in particular, relating to this motion, the Pulse being often altered after such a time, we eat and drink according to the quality or quantity of what we have taken : Nay it will be altered by the injection of several liquors into the Blood. Nay, not only so but by two experiments made upon other animals, it is *ad Oculum* proved, that the motion of the Heart may be revived when it hath entirely ceased, as first by forcibly blowing into the Lungs, it hath received a new motion, when it had been before suppressed by some Violence. The second is when a Heart hath been excised, and its motion hath stopped, it hath been again renewed by pricking of it. These are proofs that it is susceptible of Motion from some irritation, which is all I intend, and of which it is not difficult to assign a Physical Reason.

XI. The Separations are also of two sorts, Natural and Preternatural ; The natural are the particular and appropriate Juices, whether Excrementitious or Useful ; that is, such as are at all times in health separated, by the means of the several Secretory Vessels, and these may be altered in quantity, quality or both. The preternatural separations are, when some unusual Juice is separated or deposited upon some part, not by nature besetted for such separation. These being the only things that can fall under the cognisance of any of our Faculties, must be the only means by which we can immediately discover any alterations in the Blood, and of consequence must be the only guides, that can safely direct us in our methods of remedying them. For although these thus discovered Alterations plainly imply some real internal change in the Blood it self, upon which they depend, yet that never being to be known but by these ; it is these only that do inform us of it, and therefore can only govern us in our proceedings in it.

XII. Being by the help of our natural faculties assured, first that the Blood, is compounded of very differing and unlike parts, secondly that it is daily receiving, thirdly that it's constantly separating, and fourthly that it is continually moving : and this in its natural and healthful State : and its preternatural or unhealthful State, being only to be dis-

discovered by some changes in some of these, viz. in its Motions or its Separations. But the Motions more immediately regarding the Blood, the Separation being from it ; and the Separations being ordinarily observed to lessen, as the circulatory Motion encreases, and to encrease as that lessens ; the natural State of the Blood seems as to us, to consist in a sort of mean, between two extremes : In the one of which its Motions appear so violent, its parts being by that means so jumbled, mingled and confounded together, that there is not time or space for leisurely and natural Separations ; hence they appear little, and confused, according to the degrees of them : The other is when it is not forcibly enough moved to preserve its mixture, so that it becomes apt to break and part, and here some particular Separations are for the most part encreased. But the Conduits in which the Blood runs, being not equally sized, and Mens postures sometimes altering the Motion, through the particular parts, it must necessarily thus breaking, some times circulate unequally, by which reason some Separations will be in greater proportion often encreased ; whilst perhaps some others are rather diminished.

C H A P. V.

I. **T**He changes in the Blood being only to be discovered by some of the already mentioned ways, for as for what we learn from the diseased, it only relates to his perceptions : And the Blood being altered, and passing by the Organs of Sensation must differently affect them ; from whence the Mind will perceive pain, uneasiness, and such like, by which notwithstanding it is not able to discern the nature or properties of what thus causes them, and therefore cannot communicate what it doth not know.

II. But having already touched at these things, I shall now proceed to Diseases or Changes in the Blood, which may first be distinguished into two sorts, *viz*, Acute and Chronick, by the first of which I understand such as are Sudden and Violent ; by the second, such as are slow and languid : The first are usually but of short continuance, the other more tedious. The first may be again divided into continual, and Intermittent.

III. An Acute Disease in the Blood, is some sudden and violent Change in it, immediately perceived by some alteration in its motions, accompanied with some Changes
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in the Separation, and is usually as I apprehend, what is commonly, and in the general signified by the word Fever: It is true this is often discerned by heat, or a quick Pulse, or both. A Chronick Disease in the Blood, is only a slow Change there, that gradually arises from almost unperceived beginnings, and is discovered by the same methods: And is what is ordinarily, as I suppose, called an ill habit of Body, or Scorbutical State, or by some other indefinite term. For in either of these States, if the Blood makes any unnatural Separation; so that by that means, there is some formidable Symptom formed; it matters not whether to the advantage or not of the Patient, it has been then honoured with a particular name, and then of course treated as an entire Disease, as I shall shew hereafter. Whosoever will be pleased without prejudice to consider the Word Fever, in its general, ordinary and modern use, that is, in its full latitude, will find that there can be nothing more intended by it, (if indeed any thing certain and real) than some sudden and unknown Change in the Blood, by which the Diseased is affected either with Sicknefs, Pain, Uneasiness, loss of Strength and such like; and which can be discovered to us, but by some of the above recited ways. It is true the original and genuine import of the word, seems to carry a more determinate Sense, for if the English word Fever is taken to answer

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fever to the Latin *Febris*, and the Greek *Πυρετός*, then it seems properly to imply Heat, and then in that consists its Essence. But if we observe the Writings of some Moderns, we shall find they will not admit of Heat, but a quick Pulse to be the Pathognomonic sign, and some again neither. But my purpose not being to examine Authorities, but to follow truth, not to concern my self about the uncertain use of words, but to apply my self to things, It is certain the word Fever is now sometimes used, where there is no unusual Heat, and it is as certain it is used where there is no uncommon quick Pulse. Neither is it always used where there is the one or the other. If then it be asked in what it consists, or how it is to be known, it may be answered, In neither separately, nor in any one single Symptom, but in a bundle or Collection of several, that arising suddenly and co-existing, are expressed by that single word, and so are considered, as making one Disease. But it not being so perfectly agreed, as perhaps it may be at first sight imagined, which or how many of these must co-exist, nor whether inclusive or exclusive to others, whereby to constitute it, such being often very uncertain and differing; as will be experienced by every one conversant in practice, and may likewise be observed from the Writings of such who have professedly handled it. It must be marvellous if it hath not introduced

roduced some misfortunes to such who in their beginnings too much rely upon words, whose significations are not precisely enough determined. As to our second division into continual and intermittent, the words so exactly answering the alterations, they need no Explanation.

IV. But before I more particularly descend to treat of such things as are usually observed to be the effects of sudden and violent Changes in our Blood, it may not be altogether improper to touch at Causes, in order to try if we can by the help of them, acquire any better light into the nature of Diseases. But here methinks at first sight we meet with nothing but invincible difficulties, by reason Nature works all her Changes by such minute instruments, that are not to be discovered in any of their Operations, by our gross Faculties. And this is most particularly evident in our own bodies, since we are not able to know precisely how any of our most common Actions, Functions or Operations are performed: Neither can we by the strength of our own faculties discern the time, place or manner of our receiving the Causes, that produce in us the most known Diseases. For how often do we ascribe that to Causes without us, that was wholly or in part lurking in our own Veins? Or else how comes it to pass that sometimes a little intemperance, gives rise to the most dreadful and fatal Symptoms, and

perhaps at another time, the greatest Excesses go unpunished. It is true Analogy may go a great way in guiding our guesses; because we may observe Nature is regular in all her workings: But then we must not deceive our selves, for it is only when the Agents she employs, and the Ends she pursues are the same: But we often have the misfortune to run our selves into errors in these things, by too rashly concluding, that because natural things seem to us to agree or be alike in their sensible qualities, that therefore they can disagree in nothing: which mistake often arises, in that Men will not take the time or pains heedfully to examine them. Or that they want an opportunity, or that such is our natures, that we want faculties to do it. For the very Air that is so essentially necessary to Life, that without it we can neither live, nor move, nor have a Being, has sometimes very differing effects upon Humane Bodies, and yet hath no perceived Change in its sensible qualities; as fatally appears, when it is miserably experienced to be the unhappy Medium, that conveys those poysonous particles into the Veins of Men, which like the destroying Angels kills thousands, by pestilential Diseases. And yet there is no sense so exquisitely nice, that can distinguish them, nor no skill able to separate or divide them, nor no Judgment so strong, nor Reason so profound, to demonstrate how these are
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made, or from whence derived : Or how directly even in our bodies they exert their dreadful, although so very differing effects ; so little we know of remote Causes, or their Operations.

V. Besides we must be under an insupportable ignorance, as to Causes farther than what we can learn from the immediate and conjunct ones, by reason whatsoever is received into the Blood, must be blended and mingled with that, and impelled and whirled about in circulation as that is, whereby it must be parted, divided, and subdivided, and again be mingled and united to others, in that it must be forced to pass the small vessels ; by which it acquires new powers and qualities, very differing from what were pre-existent in it. This is most apparent in fact, in that our discharges are so very unlike to what we eat and drink, and that the blood is so extremely different, from what continually makes it. For notwithstanding Men differ so much in their Meats and Drinks, some always indulging themselves in Luxury and Excesses, esteeming nothing too rare too rich, or too dear too pamper their bodies, and to please their Palates ; whilst others bending under a loathed poverty, are necessitated to satisfy their craving Stomachs, or thirsty Throats, with what their wretched conditions can acquire ; yet supposing the state of Health or Sicknes to be the same, it will be no easie

undertaking to distinguish between the Blood of the voluptuous Beaux and miserable Peasant. Nay farther, How often from the very same Arm and at the very same time, may we observe blood drawn, that appears cloathed in very differing qualities. These things I only intimate to shew that whatsoever is received into our Veins, does there undergo marvellous changes, losing there many of its former qualities, and then acquiring new ones, that did not appear to be pre-existent in them. These things being so methinks we trifle away time to little purpose in the pursuit of Causes, which we can never know; or indeed if we did, as we are constituted, could it be of any marvellous use towards the curing of Diseases; by reason causes as Agents, can only operate according to the capacity and disposition of the Patient, that is, our bodies; so that unless we knew that, the knowledge of the Cause would be but of little moment; besides, the Great if not only End of Medicine is the restoring lost Health, which if internally performed, can only be done by altering and mending the Juices; and the depravity or faultiness of such, not being to be known, but by some effects, which must appear by some Signs or Symptoms; it is plain the Disease can be only cured by bettering the Juices; and the only guide to us in the manner of doing it, must be by the Symptoms without regarding remote causes.

VI. But

VI. But to return; sudden Changes or Com-motions in the Blood, which I shall now call Fevers, may be considered under two Heads. In the one of which the Motions may be observed violent, and the Separations lessened. In the other the motions appear altered, the Pulse being perhaps quicker, but not stronger, and the Separation, rather encreased; for although perhaps lessened in one part, yet encreased in another. In the first its Crasis or Mixture seems too strict and close, its parts being kept together by the violence and impetuosity of its circulation. In the other they are too loose, being too apt to part and divide, as not being moved forward fast enough. In the first the Blood is by the too violent and strong pulsations of the Heart too rapidly whirled about the body, that its parts, are so confounded, jumbled, and so entirely mingled, that they cannot break or part from each other, and the Vessels become turgid and full, so that there is neither time nor space for leisurely Separations. And the Blood thus furiously drove about, its parts heating and expanding, but not separating, sometimes extravasates, or bursts out of its proper vessels; for being by some means stopped, or hindered, in its crouding through the small, narrow and *meandring* passages, or by the formation or situation of some parts, or by some other unknown Cause, not so readily passing in some places, as in others, it creates and

raises Pains, Inflammations, Soreness, and sometimes Tumours; which being observed as formidable, or dangerous, become then honoured with particular names, and are treated as entire and particular Diseases; and these, which is very remarkable, are for the most part denominated from the part then affected, or from the manner of affecting; hence the Diseases, *Pleuritis*, *Peripneumonia*, *Rheumatismus*, &c. and sometimes only Inflammations, or if it burst out of its vessels in bleeding Hæmorrhages. In the second sort the Pulse is rather quick and weak than strong, the Vessels not turgid, by which it seems as if the Heart did not receive nor thro out the blood in proportionable quantity, so that the circulatory motion appears but slow, that always being as the pulsations of the Heart are. The Crasis of the blood seems somewhat loose, there being time and space for its parts to break and divide, some of which stopping, will become obstacles to it, in its progressive Motion, hence therefore it must circulate unequally, because being contained in that Motion by an impulse from the Consistent Parts, it must run in greatest quantity where it meets with least resistance, hence the secretory Vessels or parts fitted for Separations, being unequally supplied, must separate unequally; so that if Separations are diminished in one part, they will be usually enlarged in another. Thus may we often observe Sweats per-

perhaps by parts, as only upon the Head, Face or upper Parts, and sometimes profusive ones over the whole body, Vomitings, Loosenesses, sometimes, although more rarely, disproportionate quantities of Urine, which perhaps might be more frequent, were Men not obliged by weakness or command to a Bed, and sometimes Salivation: in some the very constituent parts so break and divide as to Stagnate near the Surface, and to create various discolorations and spots, but the circulation not being forcible enough, do not rise into Tumours, or create Inflammations; and sometimes perhaps the thinner parts will be spewed slowly out of some of the Capillaries. In the first of these by the Symptoms the parts of the blood seem too violently moved forward, and so too much kept together, so that the Separations are lessened. For it may be observed, as the motion abates, the Separations return, as is seen by the Saliva and Urine. In the second the motion being comparatively languid, the parts of it are too prone to divide and disunite, so that the Separations are rather encreased; but the Diseased receiving little or no advantage by them, they are only what have been termed Symptomatical.

VII. I would not be thought so vain as if I imagined that all sudden commotions of the Blood, which are comprised under the term Fever, could be always observed
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nicely to quadrate with what I have here but in the general hinted ; for although their appearances may be considered under the Heads I have placed them, yet it must be no wonder if they do not always continue in their whole course the same, for their beginnings, progress, height, or declination, will be sometimes very differing, both in their Motions and Separations. Besides the frequent remissions make marvellous alterations to the observer, by reason the variation in the Motions is immediately perceived, but that in the separated Juices cannot, because they may remain some time in the body after they are secreted, before they are excreted. However it is sufficient to my purpose, that we are indebted to these for all the knowledge we have of such commotions there, there being nothing else that can appear to direct us in it.

Recapitulation.

The sum then of what I have said is, that Diseases in humane Bodies are changes in them, and that all such proceed from the Fluids, and not the Consistent Parts. That if they are affected, *viz.* the Consistent Parts, as sometimes they are, it is by the means of the Fluids, (excepting where they are injured by some external violence). That in our bodies may be observed variety of Fluids, of which two are common, the other proper to particular parts. Of the common, one is primary, being the source from whence
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all the others, as well common as proper are separated. That the primary common Fluid is what we call the blood, which is made up and compounded of very differing and unlike parts. That this blood enjoys two motions, the one of which is natural to it as it is a Fluid, being only the intestine agitation of its minute parts: The other is its circulatory, animal, or progressive Motion, which is proper to Life. That by the first of these it is in its natural and healthful state disposed to separate and part from its disagreeable, useless and unnecessary parts; but being sometimes disordered, it is perverted in this. That separation here is not performed as in other Fluids, by impelling, protruding or someways thrusting or driving out the dissimilar parts to the top, sides or bottom of the liquor; by reason here the narrowness of the vessels, and the circulatory motion prevents that, but it is only so disposed that the several Secretory Vessels may perform it. That these Vessels are only passive in separation, for being consistent parts, they naturally remain in relation to the body in the same place and state. That in health the blood is always disposed to let go such parts, as are necessary to form such appropriate Juices, as these Vessels are prepared to separate; and the blood always circulating, these Vessels will be supplied: so that so long as these two Motions are natural, equal and just, the

the separations will be so, and then so far as we can discover, the blood is in a state of health. And any unnatural alteration observed by any of these, plainly disclose it, to be under some change, but what that is, or from whence it proceeds, is beyond the reach of our knowledge, but as we learn from these that it is. If then it is only from these, that we can receive any information of any such change; for as to what we take from the diseased, it only relates to some acts of sensation, and by them nothing of the change is discovered. Then it must follow it must be by these, we are to be governed in our methods, in order to remedy such; for although it must be allowed, that these are but the effects of some internal change, and that must have some cause, but being ignorant as to that but as we infer from these, it must be these that can direct us: for whether the cause was taken in at our mouths, and so by those passages poured into our blood, or whether sucked in with our Vital-breath, or admitted by any other aperture of the body; or whether from any Excrementitious Juice returned again into it, or from any other unknown way; the change produced by any of these being to be discovered but by the above mentioned ways, it is only by them we can be guided in our measures. So that the puzzling our selves in the investigating remote causes, which we can never know,

know, may perhaps yield delight to some, who please themselves with such speculations, but can give little advantage to the knowledge of diseases, or be of little use to the remedying them.

C H A P. VI.

OUr knowledge of Diseases seated in the blood, reaching no farther than a discovery of some unusual Change, Commotion or Disorder there, and that being only attained by our observations upon the Alterations in its Natural or Animal Motions, or its Natural or Preternatural Separations: for as for any of its Properties, Qualities or Powers, so long as it's contained in its proper vessels, that is, so long as it is running in our Veins, we seem entirely excluded from any knowledge of them. I shall now proceed to enquire what we have learnt of Methods and Remedies, whereby we may be enabled to lessen and quiet these Disorders, when too violent; and so to open and make way for the return of the natural and usual separations: Or when the Motions appear languid, the Crasis loose, the separations altered and vitiated, to better them, and reduce them into their natural state.

II. In

II. In doing this we may consider, all Medicines may be ranked under two general heads, *viz.* Either such as evacuate, or such as only alter: By the first I understand all such things, by whose means somewhat is emptied, discharged or exterminated the body, so that quantity is lessened: By the second I intend all such things that have a power to alter or change some quality, property, action or operation, without effecting any discharge, so that no quantity is thereby lost. Evacuati-
 ons may be considered either as such as discharge some part of the blood it self; or as such as empty only parts that are separated from the blood. These latter may again be considered, either as such as seem to empty what is first separated; or as such as being received into the blood do thereby some way dispose and cause it to separate; which being performed by the means of such vessels that have not Cisterns to receive and contain the Juices, are immediately discharg'd the body: Or if by such as have them, then will they remain untill such are full, or some ways solicited, and then they are from thence discharged.

III. This then being premised, it is but rational to conclude, we ought to be governed in our Evacuations by the symptoms, for what purpose is it to spill a quantity of the blood when the Disease is not seated there, or to expell a separate Juice, when the fault is in the whole Mass. Besides, such proceed-
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ings are very unsafe, for one false step here may be, in acute Diseases, of most dreadful consequence : This then seems to require great labour of thought, in searching and enquiring into the several appearances, and differing Circumstances, and great strength of Judgment in duly weighing and comparing them, to find how or in what they agree or disagree, with former Cases and Observations. It is not here what Men are pleased to call this or that Disease, that ought to govern us ; but it is the signs or symptoms themselves that we ought to regard. Neither is it here as in many other things, where experiments may be repeated, without much injury or great loss ; for this perhaps admits but of a single tryal, which possibly may terminate in the life or death of a Man, and sure therefore to be administered with the greatest Caution. And in Cases that are perplexed and intricate, where the present Indications cannot safely determine us, it may be much safer to defer the administration of any thing than rashly and at a venture to prescribe ; for it may be observed, that those very things that have had the reputation of being thought harmless and inoffensive, when but improperly applied, have created very great mischiefs, whereas, it is probable, had nature been permitted for a time to work in her own way, she might have disclosed, in what she wanted our assistance, and then we knowing her
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wants, it might have been in our power to have relieved her, whereas by too hastily attempting to serve her, before we are rightly informed by what means to do it, we may as well wound as heal her, as well injure as assist her, as well destroy as preserve her. For although our own imperfections may with modesty be so far acknowledged, as to own, that it is not in humane power at all times, and in all extremities to retrieve or preserve a miserable mortal out of the Jaws of approaching Death, since to die is an entail upon our Natures; yet with the same modesty it may be affirmed, Experience abundantly proving it, that there is so much power in Medicines, and so much virtue in methods, as we may be enabled by them, if we will but heedfully weigh them, and judiciously apply them, to give ease to such as are in pain, sleep to such as are wearied out with watching, comfort to sickness, Cordials to weakness, and power and strength oftentimes to withstand the too hasty approaches of grim and dreaded Death. But then to do this we must not give up our reasons to the hasty belief of the certainty of a magnified Receipt, or a worthless Prescription, or a pretended infallible Remedy, in this or that Disease; as if the sole Art of healing consisted in such trifles. But having learnt from our own or other Mens observations, that this will Vomit, or that Purge, the other effect
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some other Evacuation, or perhaps Alteration, and such like; we are seriously to weigh when or how, these are to be administered, and why this is performed, that pretermitted; for Medicines being only relations to our bodies, they can be only good or bad, as they are applied. For by such, Men do not cure Diseases generally, that is abstractedly considered, and so existing no where but in our own Minds; but as somewhat really existing in this or that Person. So that the application of Medicines relate only to that Diseased Person, whose Case is to be considered in its full Circumstances, and to be compared with others, that our own or other Mens observations hath furnished us with; and accordingly our Methods and Medicines are to be adjusted. And in doing of this we can only be safely govern'd by such Indications that fall under our cognisance, which if the Disease is in the blood, must consist either in its Motions or Separations: For we ought not to rely much upon the uncertain and unsafe account taken from the Diseased, who can only relate what he knows; and how little we can know of what passes in our own bodies, every One's Experience will sufficiently inform him. So that it is only by those by which we can be guided, when or how to evacuate, and when not.

IV. But, in order to come to a better understanding in these things, we ought to consider that all Evacuations presuppose something that is hurtfull, inconvenient, useles, or unnecessary to be Evacuated; so that rightly to determine of the kind or manner of Evacuations, we ought first to be informed what it is that requires it; and to know this we must have recourse to the symptoms, for it is from them only we can collect, where or how the peccant matter lodges, and that being learnt, our Evacuations may accordingly be adjusted. Thus if we perceive the blood hot and boyling, and so rapidly impelled through its proper Conduits, by the strong pulsations of the Heart, that the parts appear so much confounded and mingled, that the visible Separations become comparatively lessened, and those that are, so altered, as they appear rather to be the effect of some violence, received by the secretory vessels from the too violently running blood, than from an orderly and leisurely separation. In this Case there being no appearance of separation, nor no aptitude or disposition to separate, there can be nothing that seems to point out particular Evacuations, by reason there is as yet nothing separated to be evacuated; so that here the only evacuation that Art hath found out, or reason can direct, in order to remove what is hurtfull or inconvenient, is to let out some part

part of the blood it self: for its vessels being by this means emptied, there is gained space and time for separation, for having more liberty, the parts may the better part and divide; neither can they be so rapidly moved, the parts not being so contiguous. Besides, during such commotions, the parts are so confusedly mixed and blended together, that the noxious and peccant are not to be distinguished, as being as yet undivided, so that it is trifling to pretend to evacuate what as yet is not separated, and so does not formally exist. Neither are we as I apprehend, enriched with any one Medicine that is endowed with any certain property or power, whereby safely to bridle, stop, hinder or quiet this violent commotion, when once actually begun: the utmost of our power for the lessening this, seems to consist in bleeding, and the utmost of our skill in the repeating or proportioning the quantity. It is true indeed, such is the nature of our blood, that such violent commotions are never lasting, unless they are supplied with fresh Matter that will continue or encrease them, as I shall further shew in the case of Hecticks; for they will most certainly some way or other determine themselves either by breaking in upon, stopping or hindring some motions that are essential to life and so extinguish it: Or otherwise they will gradually abate, the blood despuming it self, by the help of the secretory vessels, or some o-

ther passages, that is the separations will return ; or if it doth not fine it self by these natural ways, it will cast out or throw off its noxious and offensive parts, by some unnatural separation, that is upon some consistent part, that is not by nature adapted for such uses ; for such is the undoubted nature of our bloods, like all other liquors made up of dissimilar parts, that it will some way or other despume it self ; that is, the Orgasm will cease, unless it be continued by a supply of hurtful parts. And as bleeding seems to be the only direct Application for the reducing this, and the disposing it to separation ; so is the observing a due regiment, in the regulating our foods and drinks, that nothing may be taken, that will contribute to the continuing this disorder, the principal means to prevent it ; for although we know nothing positively that will suppress it, yet we have too often to our misfortunes experienced what will support it and continue it.

V. All other Evacuations presuppose some peccant Matter to be discharged, now how can we propose to evacuate what is not ; for although we admit all such violent commotions in the blood to have some cause, and that so far as we can well conceive of it, must be by the admission of some new, or by the return of some formerly separated Matter, which being very heterogeneous, creates such disorders ; yet this very Matter by the continual

tinual motions of the Blood, being entirely mingled with it, does then with that constitute but one common Mass, untill such time as it is again separated from it, by the means of the secretory vessels, or natural passages, or thrown upon a particular consistent part ; and then being thus parted it becomes the subject of our care. For the parting or separating peccant or offending Matter from the rest of the Mass, is a part purely natural, as I shall prove hereafter. It is true Art may give assistance, when Nature is disposed to part with it. Or it may by the abating the too violent Motions of the Blood, by bleeding, unloosen, or as it were unbind its parts, that it may be fitted for separation, but cannot divide the peccant parts, or force them to divide or separate from the other: but of that hereafter. However, they are not to be discharged separately untill they are divided.

VI. It is an usual and prevailing practice in the beginnings of most acute Diseases, that are supposed to be seated in the Blood, to administer a vomit, and indeed it seems reasonable where we have probable inducements to encline us to think, that the Origin or Continuation of the disorder flowed from some extraneous Juice, admitted with the Alimentary ones ; or that such had become hurtful by their quantity or stay in the stomach. For being ascertained by the surveying the Organical parts of a humane body, that

such Juices will gradually be distilled into the Blood, and Experience teaching us, that its Orgasm will be encreased or continued by them; and a vomit in its operation reaching and discharging what is here contained, its timely exhibition may be of marvellous advantage. But then it must be as I conceive, before such Juices have passed into the Blood, or at least before its motions are become so violent, that the separations are hindered, and upon this that celebrated Aphorism of the great *Hippocrates* seems to be grounded *Ἀρχομένῳ τῷ νόσῳ, incipientibus morbis, si quid movendum videatur, move, vigentibus autem quiescere multo præstat*, for when once the commotion is become so violent that the separations are hindered, comparatively speaking, all Evacuations, except bleeding, seem only to encrease it.

VII. But here once for all I declare, that by the word separation, I only intend a parting or dividing of some Juice from the Blood, which when parted is very unlike Blood: This if performed in a natural way, is done by the secretory vessels, or some passages provided by Nature for that end; (this I take in to prevent an Objection, that perhaps some may make, who will not admit of sweat to be made by such vessels. This being premised we may sometimes observe the whole Mass to be so disordered, that it bursts, extravasates, or is forced out of its proper Channels, and stops, lodges, or is some-
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ways hindred, and then extends a particular part; from whence many Diseases learnedly treated by several Pens, seem to proceed, as *pleuritis, peripneumonia's*, and such like; which although known by distinct names, and reckoned as particular Diseases, as affecting different parts, yet seem all to be derived from the same cause, and of course to be remedied by the same methods. For in such Cases although there is a particular consistent part grieved, yet that doth not appear to proceed from any particular Juice there separated, but from a part of the very substance of the Blood; which farther appears in that these and most other inflammatory Cases, if they are not timely relieved by Venesections, they will heat, inflame, expand and gradually be changed into what we call *Pus*, Matter, or Corruption, and I think the being converted into such, is proper only to Blood, no appropriate Juice, so far as ever I could observe, being ever changed into that. Now as Bleeding is the only effectual Evacuation that can be safely administred, in these violent Commotions when the Blood separates so little, so particular Evacuations can only safely be used in disorders, where the Blood seems so apt to break and part the appropriate separations being rather comparatively encreased; but of that afterwards. It is true, Diseases ranked under some of the above denominations, have not always ter-

minated in suppurations, in cases where there hath been no Evacuation by bleeding ; but then it hath as I apprehend been, where Men have deceived themselves by esteeming the Disease the same, because the part affected is : And not regarding the difference that may be in the affecting Juice ; or the motions or the separations of the blood, or other attending Circumstances ; but mislead themselves by the only consideration of the part affected ; and then complain of the unsuccessfulness of methods. For it is most certain it ought not to be the consideration of this or that part affected, but the motions and separations of the Blood, that in such cases should govern us.

VIII. When this hindrance, lodging, or extravasation of some parts of the Blood, or if you please, Inflammation happens upon the breast, so that the Organs appertaining to respiration are affected by it, it hath been sometimes usual to have recourse to that sort of Medicines that have been termed Pectorals, which have been thought to be of use for the relief of these parts ; for which reason I shall now enquire into their Operations and Effects, if really they have any in the present Case. But to do this intelligibly we must first consider what in fact we may observe in these Diseases, first when these parts are moved they are violently pained, and extremely sore, as appears by their manner of breathing, dread
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of coughing, and their own complaints ; which seems to arise in that the Blood being stopped or hindered in its passage or some way extravasated ; the Organical parts are thereby extended, stretched, loaded, and as it were torn, so that their motions from thence become painful and troublesome.

2^{ly}. That the froathy Matter that is brought up by Coughing is frequently mingled and streaked with Blood, which seems to proceed in that the Blood circulating impetuously does impell and drive forwards the hindered or extravasated parts, and so forces them, or being by them diverted or obstructed in their usual Current, are themselves drove and squeezed thro' the small Meandering Capillaries into the Cavities of the Airy vessels, and from thence with that froathy Juice or Spume that passes the Membranes of the Lungs, it is brought up by Coughing.

3^{ly}. During the continuance of these symptoms, as what is expectorated is but little, so it is but of small or no advantage to the diseased.

4^{ly}. That after repeated or proportioned Venesections, that the Blood vessels are sufficiently emptied, and its inordinate motions somewhat quieted, the hindered or extravasated parts being gather'd up, or receiv'd again into the Blood ; the pains and sorenesses mitigate, and that froathy Matter streaked with Blood ceases ; and then succeeds a thicker

ker digested Matter discharged the same way; which being out of the Breast is called Expectoration, and this is brought up by the passage of the *Trachea* from the Lungs, by the means of Coughing, (as I shall shew more at large, when I treat of Consumptions) which is a violent and unnatural motion in the Organs of respiration, and is usually occasioned by some extraneous, disagreeable or unusual Matter some ways irritating or affecting the tender and sensible Fibres of the parts appertaining to it, by which motion the offending Matter is discharged or displaced. And since these parts are not stimulated into Coughing, by which Expectoration is performed, but when they are some ways unusually solicted, (for Men do not Cough always) the facility or difficulty of that Evacuation must depend upon the nature or the situation of the Matter that thus causing Coughing, is to be discharged by it: Which in the present Case must consist either in that it is not well parted from the Blood, or that it lies low in the smallest vessels, and so cannot without great difficulty ascend, or that being so thin, it is unfit to be forced up; for as for any default in the Organ, as not being solicted into motions violent enough to discharge it, is not our present enquiry: For if it is perfectly separated from the blood, and if it be thick, and if by gentle and undisturbing motions it insinuates into the larger Airy vessels,

vessels, before it irritates to Coughing, it then seems to be discharged with ease, but if otherwise, with more difficulty. For the Lungs and adjacent parts being some ways altered or injured by the violent Orgasm in the Blood in these Diseases, cannot when that ceases so immediately recover their former Tone; but that some thing will pass from it thorough them, into the vessels of the *Trachea*, but that being now leisurely performed; it becomes as it were digested, as we may infer from the colour and consistence to be observed in it: For it is probable the separations now being slow, the thinner parts of such may evaporate with the Breath; so that what remains becomes more thick, it may be the more easily discharged by Coughing. Besides the Organs concerned in Coughing being not now so much distended, the violent motion of the Blood being somewhat abated, by which they were so stretched and sore, do better and more equally perform that motion, and of course more readily expel the thus separated Matter. Expectoration then is the real effect of Coughing, and Coughing is a preternatural motion in the Organs of respiration, and that motion is occasioned by an irritation or disturbance received by some unusual Matter, upon the tender Membranes or Fibres appertaining to these Organs, and by virtue of this motion, that matter that caused it is to be discharged, that

that is Expectorated : It is plain, this must be as the nature, disposition or situation of the offending Matter is, and that will be as the separation is. It must follow that whatsoever internally best disposes the Blood to separate, that is in these Cases, what best quiets and contemperates these violent Com-motions, are the only true Pectorals. As to what may be urged that some Pectorals seem to lubricate the passages, and to unloosen that roapy Matter, that seems so tenaciously to adhere to the affected parts ; I take to be of no weight, because there is no passage hither but by the Blood ; for admitting that some things contained in the Mouth, may supple and moisten these parts, and so help to bring away what sticks to them ; it is plain this can extend no farther than about the *Fauces*, nothing descending to the Lungs that way, so that can be of no great use ; besides, this offending Matter either is already parted from the Blood, or is as yet a part of it ; if the former and within the reach of that motion called Coughing, it will be discharged, if it is not, it cannot. If the latter, it must first be separated, before it can come this way ; besides, these parts are always moist, in such cases, by reason the very matter to be Expectorated is always so ; so that if Pectorals are of any real Efficacy or Use, it must be in the helping the separation, and how little they contribute to that, I dare not persuade any

any one to experiment, untill such time as by Bleeding the Commotion is somewhat quieted, and the Blood begins to separate, and then the greatest danger, as I apprehend, is over, and Expectoration where it is required, will be performed without any such assistance. Besides, I do not conceive in a true natural state, that the Lungs separate any thing to be discharged this way, more than what evaporates with our breath; by reason nothing can come from them, but by Coughing, and Men in a natural state do not Cough. So that it doth not seem probable that we should be able directly to make or help an internal separation by a part that is not by Nature befitted for such a use.

IX. But to return to the general Cases, where the motions are so violent, and the separations little and confused; in such all that I can apprehend that can with real safety and advantage be done, must consist in these two intentions, first to lessen and quiet the Commotion, that the Blood may the sooner separate; and when it does separate to regulate it by particular Evacuations, according to the Indications. The first is to be considered two ways; First, positively what is to be done. 2dly. Negatively what is not to be done. The first principally, if not only, consists in bleeding, and in the repeating or proportioning the quantity, according to the Symptoms, Circumstances and Indications.

ons. The second in what is not to be done, for although Art hath not as yet taught us any one remedy that will safely and effectually quiet or suppress this Commotion ; yet we have learnt what will encrease, enrage and continue it, as is most evident all flesh, strong Meats, spirituous Liquors, and such like will do. These therefore are to be forbidden, and such things only conceded as will not.

X. The sum then of what hath been here said, is, that in violent Commotions of the Blood, where the separations are but little and confused, the Pulse strong, and the Heat intense, the only Evacuations that can with safety be administered is Bleeding, by reason others presuppose separation, they only discharging separated Juices, and here separations are really wanting from the very nature of the Disease, and we cannot reasonably pretend to Evacuate what as yet is not, or what at least is so mingled and blended with the Blood, not being as yet divided from it ; and therefore not by such methods to be evacuated.

C H A P.

C H A P. VII.

THE other general head under which I have comprised sudden and dangerous changes in the Blood, is, when its Motions are altered, but in a very differing manner, the Pulse being usually too quick, but not vehement or strong, so that the Circulation is rather languid than rapid, the heat perhaps rather unequal, the Vessels containing the Blood rarely turgid or full, sometimes discolorations or eruptions upon the Skin, or Blood gently spewed out of some of the Capillaries, the separations being rarely either lessened or suppressed, but only altered, or vitiated, or perhaps some increased, though others lessened, as may be frequently observed in partial, or sometimes profusive sweats, in Loosnesses, Vomitings, in a full quantity of Urine, although perhaps foul; in the Mouth and Tongue which are often foul, but rarely perched or dry, unless by an accident after sleep, where they breath by the Mouth: By these or such like Symptoms, which will be very different in different Persons, it is very evident these separations are continued, and are by some passages or other discharged. There are other separations that
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by reason they are not excreted the Body, are not so readily observed by us, yet appear sometimes by their effects to be altered and vitiated, as may be inferred from Tumours sometimes arising upon the Conglobate Glands, and sometimes by the pains upon the Region of the Spleen. Now these being vessels without doubt separate their particular Juices, which most certainly have their determinate uses, although we are ignorant in what they are, and must, as I apprehend without a Revelation for ever be so. But however, thus far we have by Experiments learnt, that these are not absolutely necessary or essential to life, by reason an Animal may live after their exsection; but there is another separation that is inseparable from life, and that is of the spirits by the minute Glands of the Brain, and this also in these cases may be observed to be perverted and altered, by the confusions and disorders that may be experienced from them in the performance of their natural Offices, Actions and Uses, in Sensation and Organical Motion, as is most apparent by these symptoms we denominate *Phrensies*, *Deliriums*, *Coma's*, *Convulsive Twitches*, and such like, that are not unusually attendants to these sudden Diseases.

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II. These Symptoms, Appearances or Indications, thus in the general and briefly only remarked, plainly denote a state of Blood, extremely differing from the former; altho' by reason of the suddenness or violence of the seizure, or of the danger in them, or that perhaps they may seem to agree in some one or more particular Symptoms, they have been promiscuously comprehended under one and the same Term, Fever. Notwithstanding which, they being so very differing and so unlike in their real natures, as consisting in such opposite states of Blood, it is obvious the methods to be proposed for their remedies should be so, and Experience abundantly teaches us, they ought to be so. In the former of these the parts of the Blood are too vehemently moved, and therefore permit of little separation; and of consequence indicate no particular Evacuation, there being nothing separated to Evacuate: So that what is there to be discharged is only a part of the Mass it self, by Bleeding, for it is faulty in quantity, by reason the ordinary separations are lessened, and the Blood seems to require more room. In this latter the motions appear languid, the mixture loose, the separations not comparatively lessened; here therefore the separated parts may be Evacuated, if the other Indications will permit, but no part of the whole Mass to be lost, the Blood here

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requiring no room, for it rather breaks too much.

III. But to come to a clearer understanding of these things, I think it will be proper to premise somewhat of the differing kinds of Evacuations, and what we can observe and collect of their Operations, that from thence we may be the better regulated in their use: For if we can come to any certainty about that, we may be the more securely guided in our Judgments, in the discovering in what cases they may be with safety or advantage administered, and in what not. But to do this we must consider that all particular Evacuations, (and I call all such, but Bleeding,) may be ranked under two heads, *viz.* Either such as are immediately performed by Organical motion; or such as are only the immediate effects of separation. Of the first sort are Vomitings, Purgings, Sneezing, & *cætera*. For these are nothing but violent and unusual motions in the Organs subservient to these uses; which being irritated, solicited, or some ways affected, by some incongruous or disagreeing parts, fall into these unnatural motions, by which these several effects are produced: Of the second sort are Sweatings, causing Urine and Salivation: these are caus'd by a Medicine exerting its power among the insensible parts of the Blood it self, by some ways moving, breaking or dividing them, disposes them to separations, which

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running off by those Vessels that are best befitted to receive them, so increase the quantity of such Juices, that are there separated, that they are continually drove and forced forward, either to be discharged immediately out of the Body, as in Sweatings or Salivation; or else they are received into some Cistern or Repository, where it remains untill such time as the Fibres or Membranes constituting that, are loaded by the quantity or some other way solicted, they contract, and so discharge what is there contained; as we see in the returning Urine from the Bladder, which is not made there, but separated by the Kidneys, and so from thence drills down the Ureters, and lodges in the Bladder, untill discharged from thence.

IV. We may likewise consider that in the first of these that are only caused by the Motions of the Organical Parts, that the Medicines that occasion such are conveyed, or do pass into the very parts, where the Fibres, by whose motions the Evacuation is performed, are situated: And that the Operations of such do always succeed, that is, that an *Emetic*, *Cathartic* or *Sternutatory* Medicines will be such to all Persons, and at all times, if administred in quantity, and can be but lodged upon the parts; except in such cases where the Organs are incapable of motion, or insensible of irritation: Or where a vain and continued use hath rendered them

habitual and agreeable, as we may observe in the use of Snuff. Whereas in the latter where the Medicine exerts its power in the Blood, and so only disposes that to Separation : And the succeeding Evacuation is but the effect of it ; the Operations are much more uncertain, as may be experienced from Sweating, Urine and Salivation, which will not always so regularly follow the use of such Medicines as are esteemed promoters of them : In these last cases the Evacuation is but an effect of the Separation, which the Medicine is presumed to help or make ; but in the first the Medicine occasions the Evacuations, but does but by accident promote the Separation, as I shall prove more at large, when I treat severally of them.

V. I shall here only take notice, that although it is most certain in the Operation of Purging Medicines, that more is sometimes Evacuated, than can in reason be supposed to have been Separated, or contained in the Intestines, or in the Vessels adjacent to them, and so of consequence must be parted or brought out of the Blood : Nay, although some parts of the Medicine do undoubtedly pass into it ; yet it doth not there seem to exert any Energy, Efficacy or Virtue, in disposing or helping to part or separate those Juices that are discharged by it : But only by continually Soliciting and Irritating the Fibres of the Bowels into violent motion,
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the Blood Vessels that pass in about the Membranes of the Intestines and adjacent Parts, are squeezed and variously affected, by which such parts as are best disposed to insinuate into the Cavities of the Meandering Guts are discharged. For were this otherwise, the separations could not be of so short continuance as never to out live the motion of the Bowels, as I never yet could observe they did. But of this more when I treat of Opium.

VI. Diuretics or Medicines causing and encreasing Urine, may be observed to be very uncertain in their Operations; for Urine being a separation from the Blood, whatsoever causes or encreases that, must some way so dispose or alter the Blood it self, that such of its parts may be more plentifully secerned by the Kidneys, and from thence flow into the Bladder. And the Blood being so very different in several Bodies, it can be no wonder if the same remedy does not at all times in all Bodies produce the same effect; as it is most evident it doth not, that being often a powerful Diuretic in one, that in another will discover no such Virtue. For perhaps, modestly and truly speaking, Art hath not as yet prepared any one Medicine, that will at all times, to all Persons, prove it self a true and real Diuretic: By which I understand such a Medicine that will always cause such a quantity of Urine as will

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plainly demonstrate it, to be the genuine effect of it. Not but that I own there are some things that usually pass the strainers of the Kidneys, and so some ways affect the Urine, as plainly to prove it, by the smell or some other ways, as is most apparent in that common Esculent Plant *Asparagus*, as likewise in Turpentine, Nutmegs, and several others. But notwithstanding such notoriously disclose by the alterations they occasion in the qualities of the Urine, that they some ways affect or pass that way, yet it doth not always appear by the quantity that they encrease it. And as I conceive it is a very different thing for a Medicine to pass out of the Body such a way; and a Medicine to cause or encrease the discharge that way.

VII. As to what are call'd Diaphoretics, I must likewise ingeniously acknowledge, that I have never as yet been so fortunate as to have found one (although I have tried many that have had the Authority of great Men to recommend them) that would always, that is, regularly, constantly and certainly produce a Sweat, without the assistance of external Warmth or Heat, and by that it may be effected without them. I would not be here misunderstood, I do not say this to condemn the use of Medicines ranked under that Character: Nor that the Body being sometimes disposed for Sweats, they may not be occasioned, assisted or encreased

creased by them. But what I intend is only this, that there is no one Medicine that will upon all Persons, and at all times, unassisted by outward heat, certainly procure it. And I am now hinting at the Separations made and enlarged by virtue of Medicines operating in our Bloods, and their general uncertainty; and not of this or that Medicament, being a Diuretick or Diaphoretick to this or that particular Person, for in such, I own, we abound. This being only in the general premised of internal Evacuations that are sometimes prescribed in these sudden and dangerous Changes of the Blood, where the Motions are comparatively languid, and the natural Separations rather vitiated than lessened, and which are often accompanied with preternatural Ones; which I have already explained.

VIII. The next Consideration is, which, or when, one or more of these may be with safety and advantage administered; to clear this we must observe the only Indication that points out to us an Evacuation to be made or performed by the immediate Motion of the Organical parts, is, that there is some actual Separation of hurtful or unnecessary parts that are already lodged to be thus Evacuated: Or that the Blood appears some way disposed to Separate such parts; by reason such their Motions can only discharge what they already contain, or what

they can receive from the Blood and the adjoining parts, during the Operation. Now if it appears by any discernible Separation, that any advantage accrues to the Diseased by it, that is, the Disorders abate, and the Symptoms lessen, so that the Peccant or Offending Matter seems to pass that way, it is plain it ought to be cast out, that the Body may be freed from it; and in that very way it seems best dispos'd to pass. But on the contrary if such are experienced to be hurtfull, or if no advantage is perceived to proceed from them, it seems to little purpose by such Evacuations to continue or encrease them: For these not being to be performed without a violence upon the Spirits as being the Instruments in these Motions; if therefore they are in themselves hurtfull, or indeed useles, as discharging what is of no advantage, they must be farther so, in disordering and thus unnaturally harrassing the Spirits. For the advantage or disadvantage of these Evacuations in the present Case, must be according as the Blood is disposed, or not disposed to part with, divide, or separate from such offending or hurtful parts that occasioned its disorder; that they may be by this means expelled. For these Evacuations being performed by the Motion of the Organs, and so as it were external to the Blood, can only discharge what that hath already separated, or what it will separate during

during the Operation. And since the parting, separating or dividing, Peccant, Offending or Hurtfull Matter from the Blood, must be done by the Blood it self, the Organical parts being only passive in Separation: It will, I think behove us first to examine into the Virtues and Efficacies of Medicines immediately Operating there in order to try what we can learn of their Effects in the helping or forwarding these.

IX. Every days observations will abundantly confirm us in this most unhappy Truth, that even the most Plentifull Separations from the Blood, whether discovered by Vomiting, Loosnesses, Sweats or Urine, or any other natural or preternatural way, do not always exterminate the Peccant or Noxious Matter; by reason the Diseased hath not certainly an advantage by them: Nor when they are procured by Art, are they constantly attended with success. From which we may infer, that unless the Blood is disposed to part with, or Separate the Offending Matter, the forcing of it into this or that Separation, will be but of little Efficacy to do it. And there being but two kinds of Evacuations in ordinary use, in these sudden Diseases in the Blood, that proceed from the immediate effect of Separation made by the Medicines there; and these are by Sweat and Urine. And having already, in the General, toucht at the great incertainty in the Operation of such Medi-

Medicines as are commonly esteemed Diuretics ; and having likewise distinguished between such as properly pass by Urine, and such as cause or encrease it. For if we should term all Diuretics that pass that way, then our common drinks, as Small Beer, Water and all such, may deservedly bear that denomination. For, generally speaking, the more we Drink, the more we return by Water, unless we Sweat. But if by Diuretics we intend such Medicines that will in such a proportion encrease the quantity of the Urine beyond what reasonably could have been returned in such a time, and from so much Liquor drank as will evidence it to be the effect of the Medicine, assisting or enlarging the Separation that way: Then I am apprehensive there are but few such that will regularly and constantly do that. It is true, generally speaking, all Liquors that are perfectly fine, that is, that have purged themselves from their gross and dissimilar parts, do most readily pass off by Urine ; and ordinarily the thinner it is, the sooner it passes ; and especially if it be drank when our stomachs are empty, for then making no long stay there, nor being entangled with other parts, the whole quantity insinuates into the Blood, where for want of a due Medium of some grosser parts, it does not so intirely nor so perfectly mix,

mix, and so by that reason the sooner passes away with the Serum, which mostly goes by Sweat or Urine, but the Body not being in Bed, and so not usually encompassed with an equal or sufficient warmth, it cannot evaporate by the Pores, but runs off by the Kidneys. But in these Cases there is seldom more returned than drank, but usually much less. And as I observed in the use of Diaphoretics, that they rarely create Sweat, unless assisted by an external heat; so in Diuretics, they seldom enlarge Urine, when the Body is too hot: So that they seem to be a reverse to each other, when Men Sweat most they usually Piss least, and when they Piss least they Sweat most. And Persons in these Diseases, being, by reason of weaknesses, the Nature of it, or common usage confined to their beds, Diuretics must be often experienced ineffectual Remedies; neither are such as are esteemed the most powerful often administered in these Cases. Wherefore I shall here pretermitt any further Enquiry into their Nature or Uses, but now apply my self to Diaphoretics; the Consideration of which will give some light, what may be expected from the other, should they be brought into Use, and should they regularly effect what may be expected from them.

X. But before I descend to enquire into the Effects and Operations of Medicaments causing Sweat, it may not be improper to get some light into their Effects to make some Enquiry into the nature of Sweating it self, which, I think, if diligently and heedfully observed, may deservedly be considered under three several sorts or kinds.

The first to be observed is a Cold Clammy Colliquative Sweat, such as accompanies sometimes Faintings, Swounings, Sinkings, Fits, in some sudden falling back of the Spirits, and seems to proceed in that the Cutaneous Fibres are relaxed by such their recession; and the motion of the Blood being in such languid and slow, it is by that disposed to break and part, some serous parts insinuating thorough the Pores of the relaxed Skin, and then by reason of the slowness of the Circulation soon appear Cold: This when it arises from Passion, Fright, Surprise or Disorder of Spirits that way, is a thing slight and not dangerous, but if derived from a deeper root, and is the effect of some internal change in the Blood, and so the Spirits become Disordered, as being vitiated in their very natures, it is often found to be a fatal fore-runner of approaching Death.

The second sort is a Warm Sweat, but usually partial, affecting mostly the upper parts, as Head and Breast, not often extending downwards to the Legs and Feet, and this is usually only Symptomatical; little advantage being gained by it to the Diseased.

The third is a Gentle, Warm and Universal one, during which, and by which the Diseased is relieved, so that the Morbifick Matter seems Separating, and is Evaporated this way.

By which it is manifest that Sweats are extremely different not only in their Appearance, but in their very Natures and Effects: The two first of these being merely Symptomatical, the last only Critical: To encourage the former can be to little purpose, to check or hinder the latter, unsafe and dangerous.

XI. We may farther observe in these three general sorts of Sweats, that arise often without any assistance from Art: That the first of them may be experienced in any state of the Body, without any preceding illness, in such Persons that have Fits, whether up or in bed, whether encompassed with heat or not; so that although that Juice that passes by Sweat, is most undoubtedly derived from the Blood, yet the Blood seems here but secondarily affected. The Spirits, the Instruments of Organical Motion being first disordered, as evidently appears by the preceding and attending Symptoms. The two last seem
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to proceed from the natural Motion of the Blood it self, for being disposed for Separation, the Body being quiet and encompassed with warmth it flows that way; for the Spirits are oftentimes in these Sweats, perceived under no Confusion.

XII. And as unforced Sweats are observed to proceed from two so differing Causes so may such as are forced by the power of Medicine: Thus Opium by quieting and composing the Spirits will frequently produce it. The reason of which seems to be in that the circulatory Motion of the Blood depending upon the Motion of the Organical Parts, and that being made and continued by the influx of Spirits, will of course be altered or disordered as they are: As is most notorious in Hyfterical and other Fits, where the Pulse will be often observed to be as much altered as any other Organical Motions. The Spirits then being composed by the virtue of Opiates, and by that means the Circulatory Motion, and the Body lying in Bed quiet, unmoved and warm, it can be no wonder if the Separations flow plentifully this way. And in this seems to me to consist the true reason why we always experience Opiates to hinder, stop, or indeed suppress all Evacuations that are immediately performed by the Motions of the Organical Parts, as Vomitings, Purgings, Coughings and such like, but ordinarily rather encreases

creates the particular Separations from the Blood, or if some one by virtue of the posture or state of the Body appears lessened, others are encreased; but more particularly of this afterwards. Sweats likewise are frequently created by Medicines that immediately perform their Operations in the Blood, and such are most commonly termed Diaphoretics; and sometimes Alexipharmacks, when applied where there is conceived Malignity; and these primarily affect the natural Motion of the Blood, as may be inferred from the heats they often produce; by which means the Circulation will be intended; and the Body then encircled with warmth, as being in Bed, some of the thinner and serous parts of the Blood will be forced to steem and evaporate by the Pores of the Skin. But in these forced Sweats, unless the Blood is before hand dispos'd, or prepar'd to part with, and divide from, what is Peccant there seems only to be wasted by such, nothing but the ordinary Serum, as the success proves; there being no benefit or advantage perceived by them; but sometimes intolerable mischiefs. It is true the first of these, *viz.* by Opiates, as it is in such Cases useless, so it is harmless, unless where the state of the Spirits is such, that they will not safely admit of thus quieting; but the latter by an untimely use, may even in the Blood itself produce very unlucky Consequences, for being

ing so much intended in its motions by them, that some of the serous parts are forced to pass the Pores ; it will be a wonder if others do not so far press upon the Brain, as some ways to disorder or affect that, whereby several unhappy Symptoms may be created, as what we call *Phrensies*, *Deliriums*, and such like. Besides, the Blood thus vehemently moved, its parts are so embarrassed, that all Separations become disordered, as is most evident in the visible ones. And herein may plainly be discerned the difference in Sweats procured by what are termed properly Diaphoreticks, or sometime Alexipharmacks, from those made or encreased by Opiates. In the first the heat of the Blood is encreased, the Pulse intended, and the other ordinary Separations are for the most part lessened : In the latter the Pulse is rather depressed, the Heat not augmented, and the Separations rarely diminished ; or however, if the Heat or the Separations, during the Evacuation appear altered, upon the ceasing of that they usually recover their former state ; whereas in the former the disorder once made is not so readily quieted.

XIII. There is another Evacuation in these sudden Diseases of the Blood that is become of marvellous use, and that is performed by the Application of Blisters : Of which we may observe, that upon what Part soever they are applied, their regular, certain
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and constant Effect, is the discharging some brackish Salt Water ; the manner of doing which seems to be, in that the subtle and fiery Particles of the Medicine, for of such they consist, Piercing and Pervading the Contiguous Parts, so alters, opens or dilates their Pores, as thereby to make way for this ferrous Matter to insinuate and pass ; but the outward Skin being of too close a texture for such to permeate, they are stopt by that ; hence they there gradually rise and form what we call a Blister. For an Epispastick being fixed upon a particular part, must first alter that, so that it may become a receptacle to that briny water it contains, when made a Blister ; which having been a part of the Blood must have been divided from it, by the means of the part injured by the Plasters, for the Blood being only passive in its progressive Motion, must necessarily run where it meets least resistance, and these parts being thus altered by the Medicine, readily give way for the watery parts to pass. And the water here discharged seems not in some of its qualities very unlike what is excreted by Sweat or Urine. This being so in Fevers, where the parts of the Blood are too violently agitated, its Circulation too rapid, so that its constituent parts are so mingled and confounded that the ordinary Separations are lessened, it seems to little purpose

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pose to Blister, since the excoriated parts can only receive and let pass what the Blood will supply, and that will not as yet separate or divide from what causes the disorder; so that the whole is as yet faulty, and therefore to no purpose to Evacuate apart; for by so doing we may enrage but never appease it. On the contrary, in Fevers where the Motions are not much intended, nor the Separations comparatively lessened, but rather vitiated and altered; and yet by such the state of the Blood is not bettered, why should we Blister since it is evident the Blood now separates, and that it wants not vessels and passages whereby to exterminate the Morbifick Matter, at least it would throw it off by some unnatural separations could it but once part, separate or divide from it. It is true by thus tearing of the Skin, we form new Channels whereby Juices from the Blood may pass, but by such we do not help or assist it in its separation, by which it can only extricate and disentangle it self from the Morbifick or Offending Matter, that gave beginning or continuance to this disorder. And if the separations by Sweat or Urine, are either encreased or but in due proportion, to Blister is only to give Torment and create sufferings without any reasonable prospect of relief; by reason they then discharge enough of the Serum, and if the Morbifick Matter would pass with that,

that, it is evident it would then spend it self by those ways, and if it will not, to what purpose do we apply them, since they discharge that. Besides, if the Blood can free it self of the offending Matter by its natural and ordinary separations, why then should Art interpose in it, and if it cannot such applications being external to the Blood cannot force it : Since that must be done internally by the parts of the Blood themselves. For our making new passages for the Blood promiscuously to discharge parts by, will not quiet or remedy these disorders ; it is only the separating and expelling the offending Matter that can do that : And when that separates then comes in the true use of Evacuations ; that such separations may not return or be lodged to continue or occasion mischiefs. I write not this to condemn the absolute, but only the so promiscuous use of Blistering in Fevers, for it is evident there may be some Circumstances in such Diseases, that plainly indicate their use : As particularly in *Coma's*, for whether by them that incongruous Matter that affects the Brain is Evacuated, or whether it only diverts what would supply it ; neither of which seem reconcilable to Anatomical discoveries : Or whether they only exuscitate and awaken the oppressed Spirits, by that smarting Pain that may be felt in the drawing or dressing them, which I am enclined to think ; or which way soever it

be, it is certain such Symptoms are often remedied by them. As to their ordinary use, they may lessen the quantity of the Serum, when too redundant, they may divert unusual Separations or Defluxions upon a particular part ; they may remove a Pain when permanent or fixed, or they may in the general open a passage for Separations, that will not readily pass another way.

XIV. Having thus summarily enquired into the Evacuations that are but the Effects of Separation, that are in common use in Fevers, and reserved such that are made by the means of the Organical Parts to the next Chapter, as Purging and Vomiting. And having shewed their insufficiency to contribute any thing to the Cure of Diseases seated in the Blood, untill such time as that separates and expells such Peccant Parts, as occasioned them, which then may be exterminated the Body by these ways. I shall now cursorily observe in what Cases and in what Circumstances they may and ought to be administered. But in order to do this, I must beg leave to remind my Reader of what I have already proved, that all Evacuations, except Bleedings, discharge some one or more particular and separate Juice, and that all such are only Separations from the Blood, and that when the Blood is disordered these become so. That as it is these that are to be Evacuated, so it is from these that we are to be directed.

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as to the necessity or conveniency, as likewise in the choice of the sort or kind of them; altho' as to the expediency and safety of them in particular Cases, we ought to consult the Order, Strength and Temper of Spirits to be learnt by virtue of the Vital Motions, as Pulse, Breathings, &c. We may likewise consider that the only Motive that can reasonably induce us to Evacuation, must be that there is some Unnecessary or Mischievous Matter to be discharged; And the only Discovery or Perception of such must be, that it appears to be already separated, or actually separating. If therefore the separation is made by the means of such Vessels, Parts or Passages, whose Juices are to be discharged by the Motions of the Bowels or Stomach, it is clear it indicates Purging or Vomiting; but if not, other Evacuations. But by reason it may be sometimes dangerous to Purge or Vomit, because being performed by the Motions of the Organical Parts, the Spirits as the Instruments of such Motion, may be by such means put into disorders, which may be unsafe and dangerous, and the Blood it self may be too much affected by them. And yet notwithstanding the Bowels containing the gross parts of what we eat and drink, and Juices that are separated from the Blood continually drilling into them, which will therefore by too long a continuance there, be again absorbed or received in the Blood, or

some way by their Steams and Emanations affect it, so as to encrease or continue its disorder, wherefore to remove these inconveniencies, and yet to avoid the mischiefs that may proceed by the former mentioned Evacuations: Art hath found out, and Men usually substitute another whereby these Parts are gently solicited to empty what is contained in them, without that great danger of being irritated into those violent disorders, that sometimes ensue upon the former: And this is by Glysters which gently move the Bowels, without creating such mischiefs, whereas in the other Evacuations, where nothing passes but what is immediately separated from the Blood, there can be no such help.

XV. From what hath been said, I think it may be concluded, that it ought not to be the Consideration of the Beginning, State or Declination of a Disease in the Blood that should regulate us in our Evacuations; but solely the separations: And if some Evacuations have been usually experienced of greatest advantage and most safety in the beginning of these Diseases, it hath proceeded from the reasons already urged, *viz.* That the Separations have not then been hindred; and not as to the State or Time of the Disease: And if others have been most effectual in the declination it seems to have been in that the Blood begins to separate the

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Morbifick Matter by those ways. For every state of an Acute Disease may be considered, as whether the Blood is then separating or not; and accordingly in the general to exhibit Evacuations or to omit them; it is true it doth not always follow that the Blood is bettered by such separations, the Disorders not ceasing, nor the Symptoms vanishing by them. Wherefore to encrease them seems to little purpose, and yet to suppress them may be dangerous; for these being but the effect of some change in the Blood, although what causes that does not immediately appear to be waited by these, yet the hindring, suppressing or damming these up, the cause of them yet remaining will necessarily give birth to others that may be equally, if not more dangerous. Therefore not to be stopped or suppressed, unless when by reason of their violence or long continuance, they become hurtful, and therefore require it. But here that I may not be misunderstood, I shall beg leave to declare, that although I have used those general and positive terms of Peccant, Morbifick, Hurtful or Offending Matter to be separated or expelled before the Blood can recover from its disorders, That I do not thereby intend to prove that all such must necessarily proceed from the admission or mixture with it, of some such antecedently existing. For I have only expressed it so

as being most agreeable to the mind of Man to conceive some outward and real Agent Operating in the producing all Vicissitudes and Changes in particular Substances. And likewise because I was unwilling to depart from that form of Speech that seems to me to have been most in use upon such occasions. But I do not thereby pretend to determine whether the ordinary and natural state of the Blood may not alter ; so as to appearance to have acquired a new one, that is, a Disease without any common external cause, making or procuring it. For by what means soever these Separations and Evacuations Originally proceed, is not at all material to my present purpose, since they may either way be of advantage or not. And since it is evident by a thousand instances that the properties, qualities or powers of particular Bodies may be altered or changed without any sensible loss of quantity, as I shall have occasion to shew more particularly hereafter.

XVI. But to return, the Parting, Separating, Dividing or Expelling, Peccant, Morbifick, Offensive, or if you please, Malignant Matter, from the other component parts of the Blood : Or which to us, who are excluded from the knowledge of it, is all one, the so disposing, altering or ordering the parts of the Blood, that it may be bettered by its Separations, is a work purely Natural,

tural, which may be proved both from the Nature of it, and from Fact. First, from the very nature of the thing, for it being internal, that is, amongst the very constituent parts of the Blood it self, and they having, as I have already proved, a constant intestine Motion; it is plain it must be by virtue of that they alter or change Positions, Orders or Situation amongst themselves: and this disagreeable Matter to be separated from the other parts, being mingled and dispersed through the whole Mass, can never be dislevered or parted from the others, but as it is expelled by some Motion of the others. And this Motion being by the small parts separately considered, which by reason of their Minuteness cannot be guided or governed by us, and therefore must proceed according to their own Laws. It is true, we may by some external violence, or by the adding incongruous parts to them prevent and hinder them in their regular and orderly workings; but yet we cannot so far determine them in their Effects, that is, their Separations, as to force them to divide from or expell what we please. By matter of Fact it appears too evident, that neither Reason, Experience, Art, Chance or Skill, hath as yet discovered any one Medicine that will regularly and certainly divide, part, separate or expell from amongst the parts of the Blood, those fatal, poysonous or offending Particles,

Particles in Diseases that are called Malignant, Pestilential or Epidemical, as is most notoriously evident by the frequent Mortalities in such; I have only instanced in such, although the often insuccesses in most Acute Diseases, comprehended under other denominations, clearly prove it universally true. For notwithstanding we are able by internal Medicaments, assisted with external Warmth, effectually to procure a Sweat; and so by other Means, other Evacuations; yet it doth not appear by the advantages received by them, that they do always exterminate Peccant, Morbifick or Offending Matter. And since then Evacuations will not always perform this, I shall now examine what other Weapons we have to defend our selves against these unhappy Enemies.

XVII. Which that I may perform the more intelligibly, it will be convenient briefly to repeat what I have already proved, *viz.* That we are incapable of any certain knowledge of remote Causes, or their manner of Operating in the forming or producing Diseases in the Blood: And that such being produced, all the little knowledge we can have of them, is obtained by our observations upon its Motions and its Separations; somewhat assisted by the uncertain information of the Diseased. And if therefore it is by these alone, we know these Diseases, it must be only by these we can be guided
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in our Methods of remedying them. When therefore the Indications are such as do not require or permit of Evacuations, and yet an eminent danger is threatned by the Symptoms, it behoves us to have recourse to such other methods as have been found by Experience to have been of great use in altering the state of the Blood, without Evacuating any discernable quantity of it. And of such so reputed, we abound not only in a great number of Simples, but also in a great variety of Compounds; many of which have been recommended by great Authorities, as Medicines enriched with so excellent virtues as to be able to reprieve an expiring, and recall a dying Man: That they have their good uses is without any peradventure, and perhaps had Men been more wary in observing their regular Effects, and more sparing in commending their Vertues, we might have received greater advantages by them. But then I humbly represent it to be considered, whether they must not have proceeded in very different measures, from what it is probable hath formerly been done, not to take and recommend a Medicine as a most excellent Remedy in this or that particular Disease; because, forsooth, where it hath been administred it hath sometimes ended happily; for if Men should always regulate themselves in practice by some uncertain successes, there is not any of the most dangerous

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rous, or most Contemptible of Medicines, but may be justly admired ; nor not one of the most Magnified but may be condemned ; for such is the Habit, Strength, Temper or Constitution of Men, that there hath been no one Disease, but some have withstood it, and recovered, whether they use Medicines or not use them ; and on the contrary, some will die either way : So that he that judges only of their Efficacies that way, will be often involved in very great uncertainties. Whereas, if Men would but more warily observe what variations arise by their uses in the Motions of the Blood, what Changes succeed in the Separations, what alterations are perceived by the Diseased, they might not have so often deceived themselves, and disappointed others ; as it is evident they have done by thus only attending the success. For Medicines being relations to our Bodies, can only be good or bad, as they are so to that, which must be as applied : And since there can be no rule for that, but what is collected or inferred from what appears, and nothing can appear but by the ways I have recited, it is plain it must be by them we are to be governed ; if we act like rational and intelligent Beings, and not at random, by putting all things to uncertain chance. It is true, an exacter Judgment seems to be required in making our Observations for the discovery of the certain Operations of these remedies,

medies, than of such as make Evacuati-
on ; because in them the effect of their
Operations become immediately visible to
us: But these exerting their powers only
in altering the Blood, which being contain-
ed in the close Conduits of the Veins and
Arteries, or perhaps in the dark and inner-
most Caverns and Recesses of the whole
Body, where no Eye can pierce, nor no
Hand can enter: So that there is no imme-
diate means whereby to discover the Alte-
rations made in it by them, besides the
Blood may be often observed to undergo
Changes, when there is no certain cause
known, from whence it can be derived ; so
that we cannot therefore safely acquiesce
that a change ensuing upon the use of a par-
ticular Medicine, was the certain and un-
doubted effect of that ; unless by the frequent
repeating of it, in the same Circumstances
the same Effects regularly ensue ; for me-
thinks it seems unlikely we should ever ar-
rive at any certainty about these things un-
less we will heedfully observe, and careful-
ly distinguish between the certain, regular
and constant Operations, and their uncertain,
contingent and accidental Effects, which I
am apprehensive will never be done by the
considerations of sensible qualities, which are
not to be discovered there ; and which really
exist no where but in our own selves. A Me-
dicine being a natural substance hath some
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ways or other a power to Operate or Affect our Bodies, which powers appertaining to it, as it is such a Body, and so inseparable from its nature; that is, so long as it continues what it is: It must, I say, as it is such a particular Substance, always have the same powers to affect us; and if we are not always in the same manner affected by such, it is from want of Capacity or Disposition in our bodies; that is, they are not conveniently applied. For we ought to take notice in the Administration of Medicines, that it is not this or that particular Disease that should induce us to their use, but the several Circumstances, Signs or Symptoms, attending that particular Case; for sometimes Diseases comprised under the same name are in these extreamly different.

XVIII. It is certain in Diseases we call Fevers, Symptomatical Separations and Evacuations are sometimes so far enlarged, that the natural strength is thereby impaired and lost, the Diseased Person being endangered by them: Wherefore they are in such Cases to be lessened, hindred or somewhat stopped; altho' we cannot be assured that the ill state of Blood from whence these proceed will be by that altered or mended. But to do this, if these Evacuations were performed by the Motion of the Organical parts, so that they are perhaps encreased or continued by that, it is plain that must be composed and quieted before

fore the separation will be stayed; but if the Evacuation is only the effect of this Symptomatical Separation, then that is only to be hindered, as I shall prove afterwards. It may likewise be observed in these kinds of Fevers, the state of the Blood sometimes shifts and changes; the Motions that were quick but not strong, and the Separations that were altered but not lessened, become gradually to acquire a contrary state; yet not to such a degree as to indicate Venesection; and yet the Disease continues. Here therefore we ought to have recourse to such things as will retard the Motion, and so again dispose it to separate. But to do this perhaps Art hath not as yet discovered any thing more effectual than Barley water, or some other simple distilled water, pleasantly acuated with the Juice of Limons, Oranges, Citrons, or such things. For although I dare not affirm that these will directly retard its Motions or extinguish its Heat by assisting its Separations; yet this I can averr, they will not encrease them, and besides, they are to most grateful. And if such are not kept up, and continued by an accession of fresh Matter, they will in no long time determine, by coming to a Separation, which if care is but taken to govern rightly, will for the most part terminate in the safety of the Person. But if such seem to continue too long, the Blood may then be somewhat disposed to

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Separation, by a gentle Bleeding, but this will be most effectual and safe if it be gently spewed out without bandage, for then we may unloosen the parts of the Blood, and give leisure to Separation, and make no disorders upon the spirits of an almost despirited Man.

XIX. But in that state of Blood where the Motion is rather quick than strong, and the Separations rather encreased ; and yet by such the Disease is not bettered, comes in, as I have experienced, the true use of Pearl Coral and all that Tribe, given in such quantities and in such Vehicles, as may be best suited to the Case: For to hinder or lessen Separations, appears to me to be their proper and certain effects ; if such proceed immediately from the Blood it self, and are not occasioned continually by the admission of extraneous Juices into it. For they seem to me to operate in these sudden changes of Blood, much as Steel does in slow ones ; both seeming to invigorate the Blood ; although Steel does it much more violently, as I shall remark when I treat of it. For notwithstanding these Powders have been sometimes esteemed Diaphoretics, and sometimes only sweetners of the Blood ; yet I do declare I never yet could observe any certain or regular effect of them, but that they did some ways invigorate its Motions, and hinder its Symptomatical Excretions ; for
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as to their Correcting Acidities, it doth not appear that there is formally existent any such quality there; for although it is most certain it is sometimes perceived in the stomach, or by the parts appertaining to the Taste; yet that doth not prove but that it may acquire that quality after it is separated from the Blood, as I shall shew hereafter.

XX. There is another state of Blood to be sometimes observed in these Diseases, wherein the Crasis seems to be so very loose, that some of its parts break and stagnate in their very passages, the grosser parts, it's probable, coagulating, falling and stopping in the larger vessels, whilst the thinner keep moving; and the consistent parts being relaxed, such insinuate into them, and so gradually alter and change their texture, which if near the surface is discovered by Spots, Discolorations, and such like, but in other parts where the Pores are more open, or the Capillaries lie fit for it, it spews out in Bleedings, as in the Nose, Mouth, Gums, Intestines and such like, whereas being hindred in the surface by the closeness of the Skin, it forms Spots and such like. For in ordinary Cases, I speak not of Pestilential ones, having never had any Experience in them, it is very rare to see these purple or blew Spots, but they are attended with these Bleedings, and in these the Pulse is usually quick and weak. However in these or any other Symptoms, if

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the Blood plainly shews us, that its parts are too apt to break, divide and dissociate, comes in the use of such Medicines that have been comprised under the name of Alexipharmacks: Which may be distinguished into two sorts or kinds: The one of which consists in such things as have likewise been called Astringents, which seem in truth to be only a sort of Cement to tye the parts of the Blood together, that they may not thus break and fall into parts, and so run differing ways: For these do not seem to keep the Union among the parts of the Blood, by intending or quickning the Circulation, but by binding its parts as it were together. Of these are to be numbered *Boale*, *Terra Sigillata*, *Rad. Tormentilli*, *Bistort*, and such like. These are esteemed binders, in that they hinder, as it hath been thought, the Bowels in their ordinary Motion downwards; but, as I suppose this is only an accidental effect of them, the true and real one being the keeping the parts of the Blood from dividing; which appears in that they hinder weakning Separations by other ways, as well as those by the Bowels, as is often unhappily experienc'd in Gonorrhæa's. Besides they do not quiet the Motions of the Organical parts. And why they sometimes hinder the Bowels in their Motions, proceeds from this, in that although they, *viz.* the Bowels have a Natural Motion downwards, by virtue of which what is contained

ed in them, is discharged at the common passage of the Anus ; yet they being susceptible of Motion by irritation from what is in them, that even their natural Motion will be quicker or slower, as what they contain more or less irritates ; which being ordinarily according to the quality or quantity of the appropriate Juices that are separated from the Blood and distilled into them ; which, not to instance in many Cases, appears evident by the alterations that may be observed in this Motion, by the only hindrance of that Juice that is separated by the Liver ; and may also be observed upon the return of Separations in some acute Diseases, for then the Diseased will begin to have natural and unforced stools. So that these Astringents hindring Separations of such appropriate Juices that should pass this way, the Bowels are not solicted by them, and their natural Motions being but slow, the contained Matter must necessarily indurate.

The other sort of Alexipharmacks seem only to exagitate its Parts, and intend its Circulatory Motion, and from that only hinders its breaking and dividing ; of this sort are the *Rad. Contrayervæ, Serpent. Angelic. Zedoar.* and that tribe, all whose regular Operations seem only to consist in that they intend its Motions, and are by that means assisting in withstanding those Symptoms, that seem to arise

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from

from its Coagulation, which is by their means thus internally hindred.

The sum of what hath been here said is, that in such sudden Changes in the Blood, where the ordinary separations are not lessened, and nothing contraindicates, particular Evacuations may be administred, there being then a promptitude and disposition for such, unless in such Case where by a continuance they are become hurtfull, then recourse is to be had to such things as by altering the Blood may some way hinder, lessen or check them; by reason, although such things do not perhaps separate or expell what is the cause of such, yet they may withstand it in the forming or producing its fatal effects; so that life may be by that means prolonged, and a farther occasion offered for their Extirpation. And that the parting, separating or expelling Malignant, Morbifick or Offending Matter from the Blood, is a work purely natural; and that it is but trifling to pretend to evacuate it untill such time as the Blood can separate it, or some ways disengage it self from it.

C H A P. VIII.

TH E Administration of Vomits in the beginning of sudden changes of the Blood or Fevers, hath been of so religious practice with some, that they have condemned or approved the early measures that have been taken by Others, not according to the Indications, for of such being absent they could know but little ; but as this Evacuation hath been exhibited or pretermitted. For which reason, and having likewise promised it, I shall here carefully, according to the best of my Judgment, examine into the reasonableness of this their so promiscuous use ; but to make this plain it will be necessary to enquire into their manner of Operations, what parts or vessels seem mediately or immediately to be affected by them, and what Juices they discharge. But in doing this I shall confine my self to what Matter of Fact plainly teaches, and shall not pretend to launch out into an unknown Expansion of speculative guesses, where men may lose themselves in the uncertain mazes of their own thoughts, but can never by such advance one tittle towards the discovery of truth or certainty.

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II. This practice seems highly reasonable and of most excellent use, when the Symptoms are such as indicate, there is some extraneous, incongruous or disagreeable Matter, made, collected, separated, lodged or contained in the stomach, which by its stay there creates disorders to the Spirits, being, residing, or communicating, with the Fibres composing the Membranes of the Ventricle by which means are occasioned Sickness, Loathing, Nauseating, ill tastes, Reachings, and such disorders, for the stomach not being powerfully enough solicited to discharge it by Vomiting, creates these: And if this Matter is not by Vomiting removed, it will gradually descend into the Bowels, and then either the thinner parts may be forced into or received by the Lacteal Veins, and so conveyed into the Blood, whereby its Orgasm may be continued or encreased, or else the Intestines may be so irritated by it, as thereby to make or continue a troublesome and symptomatical Loosness: Whereas by a timely use of a Vomit this might have been discharged, and these mischiefs prevented. But if there is no Symptom or Appearance, that really indicates such Matter, I cannot apprehend any advantage that can be reasonably proposed by their use.

III. But

III. But that I may the more clearly discover the proper uses of Vomits, it will be necessary first to consider their manner of Operation, by which we are plainly taught,

First, that the Fibres or the component parts of the stomach are irritated, or some ways solicited, by somewhat that is incongruous or disagreeable, by which means being disturbed they fall into violent and preternatural Motions, and then suddenly contracting with violence force upwards whatsoever is therein contained, which is what we call Vomiting.

Secondly, that this irritation that causes this forcible contraction of the stomach, does not as to its effect consist in one continued Act, but sometimes ceases and then repeats, and returns by intervals, and when these Contractions are violent the stomach seems to discharge the greatest part, if not all, of what is then contained in it by every particular Vomit. We may likewise observe variety of differing Juices, discharged by this Operation, which therefore from the manner of the working could not be actually pre-existent in the Stomach: And must therefore of consequence be some ways drawn, pressed or pumped out of some of the neighbouring Vessels, or forced or strained immediately out of the Blood it self, by virtue of the violence of this Motion: The truth

of the first of these most evidently appears in that yellow bitter Juice, is so frequently brought up by Vomiting, which is only proper to the Liver, or the Vessels appertaining to it; which having but one common passage whereby to descend into the Bowels, and that being in the upper Intestines, and not in the Stomach, is a clear proof it must be pumped up from thence by the means of this Motion of the Ventricle by which this Evacuation is performed; but that the effects of Vomiting do not reach into the lower Bowels, appears in that they do not ordinarily discharge any thing that is contained in them. But that Juices are brought or separated out of the Blood it self by this Evacuation, seems most manifest; first, in that Blood it self is discharged sometimes by it; secondly, in that such a quantity of Juices are brought up this way that could not have been supplied from any other source; and thirdly, from the immediate effect it sometimes hath in making revulsion from a particular part. What then I shall infer from what hath been observed is this, That this Evacuation by which several Juices are discharged, being only performed by a violent and preternatural Contraction of the Stomach, by virtue of which, what is there contained, is cast out, and nothing can be thrown up but what is either in the Stomach or within the reach of that Motion,
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and that which is so must be already actually in the parts that are thus by Vomiting affected, or else must be separated during the Operation. And all the Secretory Vessels being, as has been already proved, only passive in Separation; for they can neither receive, nor separate when received, their proper Juices, unless the Blood is first disposed to part with such: And it is by these, or at least some Organical parts, thorough which such discharged Juices must have passed through the Stomach before they can have been cast out from thence; and these would not have received or let pass such a quantity, but that they are forced to it from that Motion of the Stomach: It is plain what is thus discharged by Vomiting, was some ways forced or brought thither, by virtue of that very Motion, which is performed this way: The Motion or Contraction of the Stomach, which causes Vomitings, must necessarily contract, squeeze, press or some ways affect the adjoyning parts, by which means what Juices are contained in them are forced out, and the parts are then more empty: The Blood, from whence such are separated, continually circulating, must naturally run in greatest quantity where it meets with least resistance; and these parts being thus emptied, must now receive it in greater proportions: For it is to be observed that the Secretory Vessels are endowed with no Motion proper

proper to them, and not being always so situated, that their Juices can, by reason of a descent, spontaneously flow; they can only part with them, as they are forced from them, which must be by some Motion of some of the neighbouring parts, as we may observe particularly in Vomiting; or by the means of the circulating Blood, by which they are continually thrust forwards: So that in this consists the reason why the Separations made this way, during this Operation, are so much enlarged; for the Vessels being emptied by the Motion of the adjacent Organical parts, and the Blood, by which these Vessels or parts are supplied, constantly moving forward, by virtue of its circulatory Motion, must, as being a Fluid, naturally run in greatest quantity where it meets with least resistance, and these parts being thus emptied, must receive more than ordinarily, and the Blood, if disposed for separation, must therefore part with such Juices, and of course larger quantities will pass this way. The truth of this farther appears in that the Glands about the Neck, Mouth and Throat, being some ways affected by this Motion, as being upwards, are observed to pour out unusual proportions of Juices in this Operation. I shall not, having proposed Brevity, farther illustrate this by considering how these things are the better performed, by reason of the intervals between Vomits, for such easily explain themselves. IV. By

IV. By what hath been observed, I think it will follow that the only reasonable Motives that can induce us to this Evacuation, must consist in some of these things; either, *1st*. That there is some appearance of something already collected, or lodged in the Stomach that should be discharged.

Or *2^{dly}*, That the Blood being now disposed to separate, there seems to be a tendency of Matter that may be discharged this way.

Or *3^{dly}*. To make a revulsion where the Blood hath made an unnatural and dangerous separation upon some other part.

Or *4^{thly}*, Where the Secretory vessels that are within the reach of this Operation, are some ways obstructed or hindred in their natural separations, or where their separated Juices are hindred in their passage from them. These I take to be the only Cases that can in the general indicate Vomiting. And if so, then the so promiscuous attempting this Evacuation in all sudden Changes of the Blood, is not only trifling, but may be dangerous: Trifling when we would Evacuate where is nothing that requires it: Dangerous in that the Blood vessels running in about the parts affected in this Operation, must be variously pressed and violently affected, by which means the contained Blood must be strangely disturbed and disordered; besides, this being performed by the means
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of the Spirits, moving and actuating the Organical parts, those active Bodies being once irritated into such tumultuous Motions do sometimes propagate and continue their disorders into other parts, as may be inferred from Convulsions created by such; and even the Motions contributing to life, are sometimes effected by it, as appears by the ensuing disorders to be found in the Pulse, Breathings, and so forth. It is true, these surprising Symptoms seem only to proceed from them, when improperly administered; as to such as are under a weak Tone of Spirits, and are incident to Faintings, Fits, or so forth. This indeed I think may be acknowledged that the disorders made in the Blood, by the untimely use of Vomits, are not in number or danger equal to those made by Purgers; notwithstanding in their Operations the former seem more violently to affect the Body: For Emetics exerting their powers in the Stomach, by irritating that into violent Contractions are naturally spewed out by that very disorder they created; and there being no known passage out of the Stomach into the Blood, they are not admitted into that whereby to cause any internal disturbance there: So that what effect they have upon it is only externally upon its vessels. But Cathartics passing the Meandering Guts, not only give the same external disorder to it by the vessels, but likewise some parts

parts being often received into the Milky Veins, are by that means mingled with the Blood it self, and so internally act a new part there; from such observations of the manner of working of Vomits, and in such what parts are principally, and what accidentally affected, what Juices are discharged, from whence they can be brought, and where and when separated, we may, I presume, be safely governed in the true use of them.

V. Purgers in the Body of Man seem to begin their Operations where Vomits end, for as they exert their powers in the Stomach, so these theirs in the Intestines; and altho' they both agree in this, that they perform their Operations by a Motion of the Organical Parts, yet are their determinations exactly opposite: For the first is made by an inversion of their Natural Motion, turning it upward, the latter by only hastening and quickening it downwards, which is its natural course. The first seems by its effects not to reach far into the Bowels, the second entirely to be performed there. The first makes a force upon the Secretory vessels from about the Stomach upwards to the Mouth, the second from thence downwards. But both being performed by a Motion of the Fibres or Membranes, composing the Stomach and Guts, which do not appear concerned in any immediate Separations made from the Blood; they can discharge nothing from thence but
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what is already actually separated, or what does, during their Operations, separate, which sometimes, when the Blood is disposed for it, is in marvellous quantity. For although it is most certain that some parts of some purging Medicines do pass into the Blood in that the Milk of the Nurse when she hath taken Purges will disorder the Child, and by what may be observed from Mercurial Medicines, when mixed with Purgers, as likewise from Rhubarb by that particular dye it gives the Urine, and in many other instances that would be superfluous to enumerate. Yet it doth not appear that the discharges made by Cathartics are made by any Colliquation or forcing Separations, by virtue of any parts of the Medicine being admitted into the Blood; but only by the violent Motion of the Intestines by reason such never out-live that Motion, upon which therefore they seem intirely to depend. For Separations from them are so far from being continued, after once that Motion ceases, that we find they are rather hindred and suppressed, most Persons after Purgings being tyed up. Furthermore, if such do not Purge or Vomit they perform nothing, unless it be to disorder the Blood. It is true these discharges will usually be as the Blood is, more or less disposed to separate, supposing the Motions of the Bowels equal; and that it is probable may be encreased
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by the admixture of something with Purgers, as in the case of Mercurials ; but then the Separation this way continues no longer than the Motion of the Intestines, and the quantity then discharged will be as that Motion is.

VI. We may likewise observe great variety of Juices discharged this way for the Bowels being the ordinary sink to the whole Body, several excrementitious Juices are distilled into them ; and they being stimulated into unusual and unnatural Motions, these will thereby be emptied, so that this seems more extensive in its effect, than any other Evacuation, for Sweating will only excern what will pass the Pores of the Skin, Urine, only what runs through the stranories of the Kidneys, Blisters only what passes the Excoriated part, but Purging what is Separated from many and very different vessels ; besides, a large quantity of Blood that naturally passes in its proper Conduits, about the tunics of the Guts ; and they being so much affected in this Operation, such of its parts as are best befitted to pass into the Cavities of them will be forced that way. And the Blood being by this means moved must pass the nimbler, and in the greater quantity ; as appears evident in violent Vomitings and Superpurgations, for the Blood being by such brought in so unusual a proportion to these parts, the more extream parts become defrauded

defrauded of it, whereby they want of that vital warmth they should receive from the Circulating Blood, and so become Cold, Clammy and Pale.

VII. In short when ever the Blood appears proportionably to separate, and the separations are altered or vitiated, it seems safe and reasonable to Evacuate, except any thing contraindicates ; when ever such separations are either in the Secretory vessels, or in their passages hindred or obstructed, there is a necessity for it. That of all known Evacuations these two (except Bleeding) are most certain, as being performed by the Motions of the Organical parts ; which will be irritated by Medicines contiguous to them, if they are incongruous ; by which means they may be always produced. And as they are the most certain, so they are the most diffusive in their Operations, affecting more vessels, and so of course discharging a greater variety of Juices, and so are of a more general use ; there being but few separations whether naturally made by the straineries, or preternaturally thrown upon a particular consistent part, but may be some ways or other altered, changed, diverted or lessened by one or both of these. But that these being performed by the Spirits actuating and moving these parts ; therefore in the administration of them we ought carefully to weigh and consider their Condition, State or Temper,
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or otherwise we may by such a pretermiffion create great mischiefs.

VIII. And altho' these are experienced the most certain in their Operations, and the most general in their Use, yet in many Cases they must give place to Salivation as most powerful and effectual, as being the more lasting; as I shall shew when I treat of it. If then these two Evacuations do absolutely depend upon the Motion of the Stomach and Intestines, as is most evident they do, being nothing but the effect of such; and not by any Colliquation, Breaking or Separation made by the Medicine internally among the parts of the Blood; then the discharges these ways must entirely proceed from these motions, and not from any, I know not what peculiar or specifick virtue of the Medicine. And the most that can be concluded from that in these Evacuations, is that all Purgers will not equally create the same violence in these Motions; nor all Bodies will not be equally moved by the same Purgers, both which are notoriously evident in Practice.

C H A P. IX.

HAVING in a former Chapter distinguished Diseases or unnatural Changes in the Blood, into two sorts or kinds, first into such as are sudden and violent, and so called acute; and secondly, into such as are slow and languid, and so termed Chronick. And the former being again subdivided into continual and intermittent; and having briefly treated of the continued, it remains upon me, according to my proposed method, to speak something of the intermittents. In which the Blood does not, as we are plainly taught by the Symptoms, continue in a settled, disordered State, but shifts and changes; sometimes we may observe it all in a hurry, which is what we call the Fit, which gradually wears off, and then it is for a time more quiet, calm and natural, and then again it falls into a disorder; and thus these will interchangeably return at such certain and periodical times, as their returns may easily be foreknown, if by some irregularities they are not disturbed or altered.

II. I have already intimated, that there is no one known Remedy that will certainly, safely and effectually cure, suppress or extinguish a sudden disorder or commotion, actually begun in the Blood. The reason of which seems to be in that such it is probable are most usually created by the admission of somewhat extraneous and disagreeable, which therefore will not be easily quieted, until that can be again separated, and that being once separated the commotion ceases, as I shall farther explain hereafter; and that the act of separation is a work purely natural. So that if such disorders are made or continued by any fixed, permanent or lasting Cause, they can never be remedied, by reason they are continually renewed, unless the Cause be first removed. But if the Blood shifts and changes its state, falling only into commotions at certain and periodical times, which often appear in very different and sometimes surprising Symptoms; which notwithstanding in such a determinate time gradually go off and vanish; and then again at such intervals regularly return and repeat, be the distance of time, one or two days, or be it only some hours, between these Fits. In this Case we have a remedy, if methodically administered, that will certainly, regularly and effectually retain the Blood in its natural state, and thereby prevent its falling into these periodical disorders.

ders. The Medicine I here intend is the *Peruvian Bark*, a Drug, become of an almost universal use by some, and honoured with so noble a Character as to be thought the only known specifick: But notwithstanding, by its certain and marvellous effects, it justly deserves our highest Praise, yet I cannot be so uncharitably unjust to all other Medicines, as to allow it that Prerogative. By reason, I think, if we do not too much narrow our views, we may observe some other Drugs to be as certain and regular in their effects, if but applied with Caution and Judgment. But that I may avoid mistakes that may arise by the uncertain use of words, I shall beg leave to explain in what sense I here take the term specifick. But to do this so that it may the better suit to my Discourse, I must briefly repeat what I have already said, *viz.* That all Medicines may be ranked under two heads, either such as Evacuate, or such as only Alter, that by the first somewhat is discharged the Body, so that quantity is lost; by the second only some property, power, or action is changed; and so only some quality is altered. By Specificks then I only understand, an Alterative Medicine that Experience teaches us will certainly, regularly and effectually cure such a Symptom, or Symptoms, as are usually taken to constitute such a species of Disease, by only altering

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ing such Properties that make it, without any Evacuation. And herein I take to consist the difference in the sense of the words Alterative and Specifick, the former is to be taken in a more loose and general, the other in a narrower and more special sense, the first may indifferently be used for all Medicines that will by a continued use some ways alter or change the Juices, but of whose effects, we are not always certain; the latter may be taken for such an one, as hath been experienced effectually to remedy such a Disease, and so Men have little doubt of its success. And although Evacuations do sometimes ensue upon their use, yet such, by reason of their uncertainty, seem not to be of their genuine and natural effects; but only accidental, not from the Operation of the Medicine, but from the Alterations in the Juices made by it; which now by the virtue of that being again changed, come to make their usual Separations, which therefore may at first run off plentifully this or that way.

III. This being premised, the Cortex cannot, as I think, justly enjoy the Character of being the only specifick; by reason we have other Medicines that are Alteratives, that may be experienced as certain in their effects, if but as properly applied, as I shall have occasion to shew hereafter. And what hath mounted the so celebrated Cortex to such a height

of Reputation, beyond other Drugs seems to me to consist in these things.

First, in that its genuine and certain virtues in the curing intermitting Fevers, became as early known here in *Europe*, as the Drug it self; for it was that which first brought it hither, so that Men, from its first use here, being assur'd of its excellency, have not so often confounded it in Compositions, nor so maimed it by Preparations, as is usually done by other Drugs; but have kept it to its native purity, whereby its certain effects are better discovered and more confirmed.

Secondly, in that its proper use is in such Diseases as are easily observed, and may be readily distinguished and so are better known; hence it is duly and properly administered, and not so often misapplied. And indeed this Prerogative the *Bark* has above all other Specificks, that it is not now so often improperly given; for its true use being in such a state of Blood, where there are Intermiſſions, or at least Remiſſions, which become so easily to be observed, that Men cannot without very great inadvertency erre: For whose Observations can be so unwary, or Understanding so dull, unless a Man will willfully shut his own Eyes, but may discern when there is a Fit or not; that is, but may plainly see that the Diseased is not always alike. And where that is (I speak of Diseases

Diseases in the Blood) this noble Drug is a safe and sovereign remedy, without any regard what the Symptoms are: As I have abundantly experienced.

Thirdly, in that the Symptoms that usually accompany these Intermissions or Remissions that are cured by the Cortex, are usually in their seizures surprising and sudden, in their continuance violent, and in their events dangerous; hence this Drug that thus puts a stop to them, must be celebrated with the highest Encomiums; whereas in the use of other Alterative or Specifick Medicines it happens directly otherwise: For first their Virtues or Efficacies were not so early known as the things themselves; but have been gradually acquired, and have often been differently represented, so that their certain and regular Effects are not well established; for although a long and continued use hath advanced an opinion of the great excellency of some of them, yet such hath been the Custom, Usage or Fashion of so confounding them in Compositions, or so defacing them in Preparations, that their native Virtues either have not been discovered or well distinguished.

Secondly, there are but few Diseases of that rank that are esteemed dangerous; and it is such that can give Reputation to a Medicine; that so clearly betray their Natures, as those we call Fevers, that consist in Intermissions or Remissions; and it is such as

are cured by the Cortex ; hence it is not so often ineffectually administered. Whereas other Medicines run a quite different fate of being known before used, their real Operations not well established ; more confounded in Compositions, being seldom given alone, Diseases in which they are of use, not so easily distinguished. Most of which seem to me to have proceeded, in that more regard hath been usually had to the name of Diseases, and the methods of curing this or that Species of them, than to the real Alterations that might have been observed in the Juices in which they consist, and by which they are to be cured, and by which the Operations of Medicines can be safely learnt ; and that Men have not sufficiently distinguished between the true and real Operation, and the but contingent and accidental Effect ; not so much attending the Medicine as heeding the Success, which being uncertain, they have left us so. It is true the discovery of the true use of other Alteratives, must be incumbered with greater difficulties than the Cortex, for the reasons already urged ; yet it is possible they might have been better known, if they had been more accurately observed.

IV. The renowned Cortex seems to me regularly and certainly to produce but one constant and single Effect, which is the preserving, keeping or retaining the Blood in

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one certain and unaltered state, when it is disposed to shift and change by intervals, and by this means it hinders and prevents a Fit, with all the attending Symptoms which otherwise in such a period of time it would have formed; for the curing the Symptoms, is but its contingent and accidental effect; which evidently appears in that no one Symptom usually attending such intermitting Fevers or Changes is regularly cured by it, when it exists in any other Case, where there is no such intermissions: Thus neither that horror or rigor that sometimes may be observed in the beginnings, nor that Sickness, Loathings, Reachings or Vomitings in it. Nor those Pains, Inquietudes, Uneasinesses, Deliriums, Phrensies, Coma's, Convulsions, or so forth, that do sometimes accompany it, nor that Heat, Thirst, Burnings that are so common to it, nor that Sweating after it, neither one or more of these will ever be regularly and certainly remedied by it, viz. the Cortex, but when they accompany such Intermissions. And on the contrary, Intermissions will be cured by it, although they are not attended with these usual Symptoms.

V. Alteratives taken in a more general and Specificks in a more special sense, for such Medicines that cure Diseases without Evacuation, it will be clear that their Effects or Operations must be bounded to one of
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the common Fluids, *viz.* Either Blood or Spirits, and cannot immediately reach to any of the appropriate Juices ; by reason they being only Separations of such parts of the Blood as will pass the Secretory vessels, which having passed them, may be discharged ; but cannot be altered but by the Blood, from whence alone they are derived, whereas the Spirits, although separated from the same Blood, yet being the Instruments in Sensation, and of all Organical Motion, may and are immediately operated upon, not only by external objects in acts of Sensation ; but also by Medicine it self, as is particularly evident by the use of Volatil Salts, Fætid Smells, and such like, in Fainting-Fits, and what we call Hyfterical Cases, which being but applied to the Nostrils do presently betray their Effects upon the Spirits, by the hasty change that is often perceived by the Diseased, but of this and the reasons more largely in the next Chapter.

VI. The noble and almost infallible Virtues of the renowned Cortex, solely depends (as I apprehend all other Medicines do) upon its true use and timely administration : For although it is properly besitted to cure periodical disorders in the Blood ; yet it will not always perform this, as hath been often experienced by its insuccessfull use in Hæctic Fits ; and in some disorders that seem to be

be originally derived from the Spirits, for the circulatory Motion of the Blood depending upon their influx, will be disturbed if they are so : In the general it seems probable to me, by what I have collected from observing its Efficacies, that it really operates amongst the parts of the Blood, and so some ways hinders them from falling into disorders or commotions ; but if such are occasioned by any cause external to the Blood, that is by somewhat disagreeable that continually or only by intervals flows into it, and so creates such disorders, here altho' these only arise to be discernible, but by Fits, yet the Cortex will not be found a remedy either lasting or effectual, as I shall particularly instance when I treat of Consumptions. So that the Virtues of this Drug are found only certain when rightly applied ; and I think it is plain, the same may be affirmed of divers other Medicines, for the effects of Opium are as certain, that of some Volatile Salts, Castorium or Fætid Gums as sudden, some Astringents as regular, Steel as constant, and such like. It is true, these and several others are oftener ineffectually administered, for reasons already urged ; but yet notwithstanding these difficulties may be overcome, if we will but apply our selves to proper Methods ; and how far too much precipitancy by an over-hasty desire to do present service, may be a bar to it, I only offer

offer as a thing not unworthy to be consider'd; for perhaps by too eager a Zeal of doing good, we may launch out into an Ocean of uncertainty. before we have Needle or Star safely to guide us; whereas sometimes by a little delay, Nature plainly shews which way she is to be relieved.

VII. This farther is very remarkable in this most excellent Drug, that it is always best in its pure and natural dress, never as far as I could discover, bettered in its admirable Virtues, by any pompous Additions, or specious Compositions, but sometimes hindred by them; never mended by any Elaborate Preparation or Chymical Process, but often robbed and spoiled by such. For its Happy Qualities or Divine Powers, by which it produces such saving effects upon humane Bodies, must depend upon some peculiar internal Constitution, Texture or Disposition of its Minute parts, or some Modification of them; because being a natural Body its powers must arise from such: And indeed Experience clearly confirms it, since its qualities or its powers are not inseparable, but may be changed or destroyed. If therefore we by such methods come to alter these, we must necessarily be disappointed in these effects that naturally proceeded from these, and so instead of bettering or encreasing them, we shall only lessen or lose them. For there being no quality inseparable from
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Body, but only the size, figure, motion or rest of its minute parts, and these as they constitute a particular Body, necessarily include Number and some Order or Position, which is what I understand by the internal Constitution or Texture, and all particular substances primarily and in themselves differing only in these: It must follow that all the secondary qualities or their powers must proceed from them; so that if the first become altered, the second must be changed. And this I think may be daily observed by Chymical Preparations, where the Original or Native Qualities or Powers of such particular Bodies, as are thus Analyzed, are often changed and lost; and new ones thereby acquired extremely differing from the former; as may be most notoriously experienced in most of the Elaborate Preparations, whether made upon the Subjects belonging to the Animal, Vegetable or Mineral Kingdom; in many, if not in most of which, the sensible qualities are not only altered by the Preparation; but also the Powers, Effects or Operations which they would have had upon our Bodies, as Medicines are also changed, some things by these proceedings, becoming perhaps violent Emetics or Cathartics, that were in their Natures neither; or perhaps are changed from being such, to Diaphoretics, Alteratives or Cardiacs, I need not produce instances, the thing being so well known.

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And this consideration enclines me to think that no real specifick can well be bettered in any of its native and genuine Virtues, by any elaborate Preparation ; by reason these depending upon such a Modification of its parts, which in all probability must be changed, by being thus analysed ; and which, if it be, new qualities or powers must necessarily arise, but the pre-existent ones will be altered, or at least not entirely continued. For although Chymistry does most undoubtedly yield us a large number of most excellent Medicines, yet it is to me a question whether we are not more indebted to the fire, or the forms and methods of the Preparation, for those excellent Virtues we may sometimes experience in them ; than to any qualities that were pre-existent in them, before they were so prepared ; by reason these now to be discovered in them, are so different from what they appeared cloathed with, when in their natural dress. For experience as plainly teaches us, that we can no more from any pre-existent qualities in a particular substance, before it hath undergone the Tortures of the fire, conclude what it will have after it hath been so analysed ; than we can from the bare considerations of Earth and Water, conclude what taste, colour or smell such Vegetables will enjoy, that are nourished by it ; by reason in such proceedings, such substances are so metamorphosed

morphos'd as to assume other shapes, qualities and powers, which therefore are not to be known until experience hath taught us what they will be : Neither can their effects or operations, either upon our own or other Bodies, be known to us any other way. Besides, we may observe particular substances daily of themselves, that is, naturally, to alter and change, that is, assume new qualities very unlike their former, and which we could have never known would have been so, but that we observe they are so. Nay farther, although a particular Body operating upon our Organs of sense is perceived by us, yet we cannot conclude safely from thence what Effects or Operations such a Body will have upon us when received into our Juices ; as is most apparent from the very different Effects, that we every day experience, several substances will have upon us, that yet seem so uniformly to affect our Organs of sense, as to bear the same denominations : Thus several things that affect our Palates with that taste we call bitter, for instance, are notwithstanding in their Operations upon our Bodies marvellously different, some such being Emetics, others Cathartics, others esteemed Stomachical, others Uterine, and others Cardiac ; the same may be said of all other tastes, as likewise of all other qualities appertaining to other senses, *viz.* to the sight, to the smell,

smell, and the touch. And this is not only evident in Fact, but the very Nature of things proves it, there being no manner of connexion or necessity in the consideration of Body that should induce me to conclude, that because such a substance affects an Organ of sense in such a manner, therefore it must affect my Juices when received into them in such a manner. And this indeed hath often raised no small wonder in me to see Men with so much heat and pains endeavour the defence of the doctrine of Acids and Alcalies, when it may be a question whether either of them actually and formally exists in the Blood, which they would have to be so much altered by them. For by reason Juices affecting our tastes so as to deserve that denomination, may be sometimes separated from it, is to me no manner of proof, that such were formally pre-existent in it; unless Men could first prove, that such qualities were unalterable, which they can never be able to do, either in the general, or in this particular, nay, so far from that, that every days experience shews the contrary, even in the most common things, even in our daily Liquors, which shift and change their sensible qualities, for secondary qualities arising but from the Modifications of the Minute parts of Body, may be acquired after the Juices have passed the Secretory Vessels; which is confirmed in that some of
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the natural appropriate Juices are widely different in their Secondary Qualities, from every thing that can be observed in the Blood ; from which notwithstanding, they are continually separated. Besides, it seems a trifling pains to endeavour to prove that all changes in our Bodies must proceed from sensible qualities that have really no existence but in our minds ; for such in their own natures are nothing but the perception of some powers from the Body it self, Operating upon our senses ; which being perceived by the mind, is so denominated. So that remove but the Medium, *viz.* our Senses, and Acids and Salts are lost ; and thus to argue from our perceptions to the nature of things is very preposterous ; and that which will in several other cases never be permitted. But if Men will continue to narrow their reasonings for a dear Hypothesis sake, why should not the qualities appertaining to other senses be equally admitted into the causes of changes in us, as well as those of the taste ? Why I should conclude, I know the Operations of a particular substance, either upon my own or another Body, better by my sense of tasting, than by that of seeing, feeling or smelling ; or why I should know the effects of a Body better upon me, because it affects my Palate thus or thus, than it does because it affects my Eyes, my Nose, my Hands, since my Mind equally perceives

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Bodies operating upon either of them : or if we should admit the Palate here, the proper Instrument to be employed for this end ; by reason what passes into our Bodies must go this way, and so to be tasted, and accordingly either to be admitted into us, or excluded ; yet why only these two sorts of tastes to be thought the causes of Alterations in us, when we abound in so many others. And then why we should be exalted so much in our Opinions of these, as to assign the causes of our Diseases to the predominancy of one of them ; and of consequence its remedy to consist in the administration of the other, when it is so notorious that the Medicines that are celebrated to be the most powerful in their Operations, do not appear to partake of either of them : For I believe the nicest Palate would be puzzled to discover in Native Mercury, Antimony, the Cortex, Opium, and such things, either of them. Besides, the most renowned Patrons of this doctrine will be ashamed to own that the same Efficacies, Virtues, Effects or Operations upon our own, or other Bodies, will equally flow from all Acids or all Salts : So that by that they admit it is not from the Doctrine in the general, but to experience only they owe the knowledge of their particular Effects. As to what may be urged from that contrariety that is found in their very natures, from that Strife or Ebullition

lition that frequently arises between them when mingled or brought together, and how that they seem to destroy each other. I say here is nothing uncommon, but what happens (although not so much regarded) in several other things, do not several substances that are compounded and made up of very differing sensible qualities, ferment and heat, and rise into Ebullitions, and then alter their sensible qualities. Nay do not all qualities appertaining to other senses destroy each other, as is evident in Colours, Smells, and likewise in other Tastes, in all which by the admixture of two differing ones, a third will arise, unlike to either.

VIII. But asking pardon for this tedious digression, it only remains upon me, before I conclude this Section, to speak a word or two of a sort of Medicines that are in frequent use in acute Diseases of the Blood, and are comprised under the name of *Cardials* : And these seem not to be used as contributing to the real cure of the Disease, but only as a necessary means during the Disease, to comfort, refresh and keep up the drooping and oppressed Spirits. It is not my business to enter into a worthless enquiry of the Etymology of the word, and to shew how it refers to the heart, but shall here take it in what seems to be the Modern acceptance of it, for a Medicine comforting the Spirits. Our Spirits, being separated from

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the Blood, they will in some measure partake of its nature, as is obvious in Fevers, where the Blood being disordered, the Spirits soon become so too, as appears by the Symptoms that are proper to them. And then as they may be differently altered, it is clear they may require very differing Medicines to be comforted or refreshed by. And this appears abundantly evident in Hysterical cases; in which sometimes the most offensive things are then Cordials; that is, their Spirits are really refreshed by such things, that will disorder others. In short there can be no universal Cordial but things will be so as they are applied; which that it may not appear only a bold assertion, I will further illustrate it by a notorious instance, Wine and most spirituous and inflammable Liquors are generally esteemed Cordials, and are really so to most in health, their Spirits being comforted, cheered and refreshed by them; and yet it is plain there is a time when they are none; for they are so far from being Cordial to Men satiated with such Liquors, that the more they are taken, the more their Spirits are oppressed, their Understandings confounded, their Stomach loathed, and their Strength destroyed; so that it is clear they are then to such no Cordials. And if Cordials are only such things as refresh and comfort, it is plain, when we are stifled with heat, and almost consu-

consumed with flames, such things as encrease that, and nourish such, can then be no Cordials, and yet few things are esteemed Cordials, but what will do that; and if such Medicines in such Cases must be thought Cordials, I am apprehensive they may be sometimes experienced to be fatal ones; for most assuredly then the best Cordial is to deliver the Spirits from their oppression, which is not to be done by adding fuel to the fire that is, by encreasing the heat; and small Beer, Barly Water, or such innocent and inoffensive Liquors, will be often found more refreshing than all the pompous processes, or chargeable Compositions of Pearl Cordials, or Spirituous Juleps.

S E C T. II. C H A P. I.

ALthough that subtle Fluid that passes thorough the Conduits of the Nerves, which is usually signified by the words Animal Spirits, or Spirits, as I have only for brevity sake called them, is so exceeding Minute as to be imperceptible; yet if we will but attend to their stupendous Effects and admirable Operations, as they are the Instruments of Sensation and Organical Motion; we can no more doubt of their Existency, than of that of grosser and sensible beings. For should we always doubt where we cannot immediately perceive, we may suspect every thing in Nature, the very Generation, Nutrition, Alteration and Corruption of every particular substance, as likewise their Powers, Efficacies and Operations upon other Bodies, for all these are performed in such a manner, and by so Minute Instruments as are not to be discovered by our gross faculties; all that we can discern is, that such things are done, but of the manner of doing them we are in perfect ignorance; and we are as far assured that those

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wonderful Operations of Sensation and Organical Motions, are by the means of these Spirits performed within us, as we can be of any other Effects from grosser Bodies. For what can be more certain than that the Mind perceives by the help of these outward Existencies, Operating upon the senses ; and likewise that by these she guides and governs the Motions in the Organical parts ; by reason intercept but their passage in the Nerve, and all Communication between that part and the Brain, the usual residence of the Mind, is lost. And indeed what can be more marvellous than that the Mind should distinguish so many different perceptions, by the means of the same Spirits, being perhaps but only differently moved, or diversly modified in it, by outward objects Operating upon them.

II. We being thus certain of a twofold use of this nimble Fluid, *viz.* as it is the Instrument of Sensation and Organical Motion ; in the first of which the Mind perceives the Operation of outward objects upon our Organs of Sense ; on the second it gives Motion to a particular part. In the first it seems only passive in receiving advice from without, which must be by their Motion inward, that is, from the Organ to the Brain ; in the second it is active, by giving Motion by them, to this or that part ; and in this their Motion is outward from the Brain to the part.

III. But to render what follows the more Intelligible, I must remind my Reader of what I have already observed, that the Motions of the Organical Parts are of two sorts; the first of which I have called voluntary, as being under the guidance of the Mind; the second Involuntary or Vital, as being exempt from it. The first is what is performed by the external Muscles, whose Motions we can regulate at our pleasure. The second are in our internal parts as those in the trunk of the Body, which we cannot as we please alter or restrain. Witness the Pulse, Motion of the Stomach, Bowels, and so forth. And indeed all such that do immediately contribute to life, are not in our power to alter, hinder or suppress: So that these seem to proceed from some sort of Physical necessity, these parts being continually actuated by an influx of Spirits; and these being separated in a province of the Brain distinct (as Anatomy seems to evince) from that in which those Spirits are that are under the dominion of the Mind: It is probable that this their Motion downwards into these Vital parts they thus actuate and move, does proceed from the progressive Motion of the Blood that continually drives them forward, they being only separations from it, by the help of the Brain; and there being no other cause from whence this thus continued Motion can be Physically derived. And life so far

far as its nature can be known by us, consists chiefly in the progressive Motion of the Fluids, and seems clearly to move in a Circle: For the Vibration of the Heart depends upon an influx of Spirits from the Brain, by which the Blood is Circulated; and the Brain separates from the Blood, these very Spirits that thus actuate and move the Heart; so that by the Motion of the Heart and Vessels, the Blood is Circulated, and by the means of the circulated Blood (that is) the Spirits that are separated from it, the Heart and Vessels are moved. And the Circulatory Motion of the Blood being made and continued by the Heart and Vessels, and these being kept and continued in Motion by the Spirits; it is evident the Motion of the Blood will be as the Spirits or their Influx are: They therefore being altered, depraved or vitiated, the Motions proceeding from them must become so too. And these Spirits being only noble Separations made from the Blood by the means of the Brain, which appears to be a heap of Secretory Vessels, which are only passive in that performance, it is plain these Spirits will be as the Blood is (unless somewhat external solicites them into disorders.) And this is confirmed by Fact, the Pulse altering as the Blood does, as may be readily discerned by its changes. And this is not only true of the Spirits that are the Instruments of this
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and other vital Motions; but also of such as are subservient to the Mind ; as is notorious in what we call Fevers, where the Spirits become so depraved and altered as to become unfit for their regular, natural and ordinary Offices, Functions or Uses ; hence they become moulded into unusual shapes, and come to represent things disorderly, confusedly, imperfectly, unnaturally and differently, as may be observed from what happens in these Cases, we call *Phrensies*, *Deliriums*, and such like. And likewise these Spirits being thus depraved and altered, become ungovernable, not obeying the dictates of the Mind, in giving the natural and determined Motions to this or that part, but of themselves tumultuate and fall into disorders, become restless and unquiet : perhaps confusedly moving these Organs, which creates what we term Convulsive Twitches, Catching, Trembling or Motions, as may be frequently observed in such Diseases.

IV. Whosoever will but attentively consider what passes in himself, or but heedfully observe what happens to others, may easily perceive that there is a natural state of the Spirits ; which must consist in some just Temper, Order or Continuity of them, whereby they are befitted regularly to perform their natural Offices of Sensation and Organical Motion. By reason it is most certain that sometimes they do not regularly perform

form either one or the other ; as we experience in those Diseases we call *Apoplexies*, *Epilepsies*, *Phrensies*, *Deliriums*, *Mania's*, *Palsies* and *Convulsions*, in all of which either Sensation or Organical Motion is perverted or altered. And it is likewise certain, that we can discover nothing of their unnatural State, but as we can discern some change, hindrance or disorder in these their natural and regular Functions, Offices, Uses, or Operations, *viz.* of Sensation or Organical Motion; we having no other means whereby to learn any thing of their Natures but by these: So that by weighing and comparing these we are only taught to judge of their state, as whether natural and good, or unnatural and perverted, and their several degrees.

V. But these disorders in their proper Functions being in their appearances very different it may not be improper for methods sake to consider them under some general heads that they may be the better branched into such subordinate kinds, as have been usually treated as distinct Diseases.

First, then they may be considered as when they are so affected as Sensation is lost, as in *Apoplexies*, *Lethargies*, and their degrees, or as when they are so altered or perverted, that it is depraved ; they making false or confused representations to the Mind, as in *Madness*, *Melancholy*, *Phrensies*, *Deliriums* and their degrees.

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Or, secondly into such as violently affect Organical Motion as in Convulsions alone; or that, with Sensation, as in Epileptical and Hyfterical Fits. Or as when that is lessened or lost, as in Palsies, and the degrees.

And these again may be considered, either as an immediate effect of some perceived change in the Blood, as in Fevers; and then they are for the most part observed to be so entirely dependant upon that, that they are not usually then considered as Diseases, but only as Symptoms, vanishing as that Disease ceases. Or they may be considered as a Disease it self, that is, they are sometimes found when the Blood is under no discernible disorder; so that it seems only to make a depraved or faulty Separation this way, *viz.* by the Glands of the Brain; for it is well known in these Cases we can sometimes discern no other, the Diseased being in all other respects perfectly well. Again, in the first of these Cases, when the Blood is under some obvious change, such Diseases are usually continual; but in the last where there appears none, they usually intermit, returning only by intervals, there being sometimes considerable spaces of time between them. But those under the first of these heads, being usually attendants to Fevers have been considered as Symptoms in them; and in truth being so absolutely dependant of them, I shall pursue their consideration no further in this place;

place, having already touched at that in the former Section.

VI. But these preternatural affections of the Spirits, that are ordinarily considered as Diseases themselves, may likewise in the general be occasioned two ways ; either externally, that is, when somewhat without the Nerve, some ways irritates the Spirits into disorderly Motions, or else hinders or oppresses them in such. Or internally, that is, when the Spirits themselves are someways altered or depraved, so that they are unfit for their natural Offices ; or tainted or hindred in their performances by foreign and incongruous parts passing with them into the Nerves (by external or internal I intend only in respect of the Nerve, not the Body.) If the cause then is external to the Spirits or Nerve as containing them, it must be Local, that is in a part, although the Effect may be Universal ; as in the Case of Apoplexies, Lethargies and such like ; which dissections shew us have been occasioned by some extravasated Blood, or collected Juice or Matter, about the Brain ; and in such Cases, which is very observable, the Pulse is commonly slow, and perhaps strong, and the Breathing deep, perhaps with *Stertor*. Whereas if loss of Sense and voluntary Motion, is from some Confusion, Hurry, Disorder or Oppression of Spirits, which is also frequently termed Apoplectical, but which usually differs

differs from the former, in that the Pulse is small, unequal and perplexed; there is not in such an equal danger, such Fits usually wearing off. And this Observation may clearly direct us that different methods are to be pursued in such Cases, although both of them are comprehended under the dreaded name of Apoplexies. But although where there is some hindrance to the Motion of the Spirits, by some cause external to the Nerve, the effects of that can extend to no parts but what are below such a Cause; which only can break off the Communication between the Brain and that part. Yet the Spirits being irritated into disorderly Motions by such a Local Cause, those will be propagated to others remote from that where first caused, as has been observed by universal Convulsions caused by a Puncture of a particular Nerve. It is further to be observed that such preternatural affections of Spirits that are thus created by a cause external to them, usually continue until the cause be removed, not but that such consisting in Fits, that is in tumultuous Motions, must have their degrees and intermissions; but cannot recover their former orderly state. Whereas such that arise from some unlike or heterogeneous parts passing into the Nerves, or from some internal Cause, and so tumultuate and create Fits, have often great intermissions the Diseased being in all appearance well for a
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considerable time, and then returns ; but such are for the most part vague and uncertain, and these Fits are usually distinguished into several kinds, according to the parts they begin in, or principally affect. And, which is very remarkable, such as begin in any of the Voluntary or Muscular Motion, are seldom preceded or attended with any visible Alterations, in the Separations or Motions of the Blood ; and such are for the most part found of most difficult cure, the reason perhaps, as having nothing to guide or direct us in it. But if they begin in any of the vital or involuntary Motions, that is, in some part of the Trunk of the Body, they may be frequently observed to be accompanied with some fault in the Separations, and so the easier remedied.

VII. Fits, intending now by that word a disorder or tumult of Spirits, seem to have been ranked into sorts or kinds, either according to their manner of seizure, or the parts first affected, or their manner of affecting, as may appear by the significations of the several words they are expressed by, *viz. Apoplectical, Epileptical, Hysterical, Hypochondriacal and Convulsive*. For I think if we do but carefully read what hath been writ up on this subject, and warily compare it, with what we may observe in such Cases, that Fits have not always been denominated from any thing particular or different in the Sym-

Symptoms during the Fit ; but must have been distinguished from the parts where they first begin, or their manner of coming. For if this is not allowed, I cannot apprehend how we can always distinguish between Even *Hysterical* and *Epileptical* Fits, the same Symptoms in the Fit, being, as I have observed, sometimes common to them both, and that with equal violence. This indeed has been remarkable to me in Fits ; that notwithstanding it is so common to observe that in such as begin about the *Abdomen*, that they will be so often accompanied with Convulsive Motions in the outward Muscles ; yet I do not remember that I ever could observe a Convulsion began in the Muscles that ever affected the contents of the *Abdomen* or any part of the Trunk of the Body. But whether this is always so, I dare not affirm.

VIII. We may readily observe in our selves, that our Spirits are naturally capable of being moved three several ways (besides what they bring with them, as being separated from the Blood by which their influx into the Organical Parts subservient to life is continued, which may not improperly be called their natural Motion, being inseparable from them during life. The first of these is from the Mind, thus I can now write or not, I can walk, stand or sit still.

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The second from outward objects for if such powerfully operate upon the Senses the Mind cannot but perceive them, thus if I now wound my Finger I cannot but feel Pain, if my Eyes are open I cannot but perceive Light, if my Ears are not stopt I cannot but hear noise.

The third is internal to the Body, and of this the Mind perceives nothing unless it creates Pain, thus my Pulse will sometimes alter, so will the Motion of my Stomach and Bowels.

And thus are they in the same ways susceptible of tumultuous and disorderly Motion (besides what likewise is common to them, by a depraved Separation from the Blood:) thus,

First, Sudden and violent passions of the Mind will sometimes bring Fits.

Secondly, Frightful unusual and dreaded objects affecting the Eyes, horrid and surprising noises the Ears, and disagreeable smells the Nose, will do the same.

Thirdly, Extraneous and incongruous Matter, irritating, disturbing or some ways affecting the Fibres within our Bodies, will do the like, as may be observed sometimes from Emetics or Cathartics, and likewise Worms in Children, and several other Cases, which would be superfluous to enumerate.

IX. This being so, I think it will not be difficult to discover the reason why Women in the general are observed much more incident to Fits that begin in the *Abdomen*, than Men: For the Uterine parts, by which there they are only distinguished from Men, being by the great Author of Nature so constituted, as to require and undergo at certain Ages, periodical Evacuations, by which means those parts are subject to great variety of Alterations, both natural and unnatural; not only during that time, as being ripe for Procreations, they, perhaps, cannot righteously enjoy it; but also when enjoying it, that they give Life and Being to the growing Foetus; these, and even the adjoining Parts, must, it's plain, undergo great and marvellous Alterations, by which means the Fibres, the residence of the Spirits, must be unequally pressed, variously irritated and moved, and differently affected; whereby they will sometimes be solicted, and forced to fall into various, unusual and tumultuous Motions, which affecting the contiguous parts after different manners, will be so continued and propagated, as to create many and surprizing Symptoms, as may be observed in such Fits. Whereas Men not labouring under these unhappy Circumstances, the Contents of the *Abdomen* not being liable to such uncertain and unequal Conditions, but remaining, as it were, in one settled

settled and unaltered State ; are therefore observed less incident to these unhappy Cases. And it is remarkable if Boys fall into Fits, it is usually about the Age of Puberty. And one thing farther, that the more disposes Women to these Fits, seems to be that they are bred up in too easie, unactive and sedentary a Life, so that their Spirits for want of being sufficiently employed in Muscular Motion, become weak and thin, and apt to recoil and return back, and so more prone by the least disorder to tumultuate ; besides the ill state of Blood that must necessarily proceed from such a life, and so the Spirits farther depraved by that means.

X. This being premised in the general of Diseases appertaining to the Spirits, that they are nothing in themselves but some change, hurry or tumult, by reason of which their natural and orderly Motions are perverted: That is, their proper Functions, Offices or Operations in Sensation and Organical Motion, (both which are but the effects of differing Motions,) are not regularly performed. Our next Enquiry shall be how far we are enabled to regulate, alter, compose or cure these Spirits, when they are thus preternaturally affected.

XI. But to do this we must consider, that a Disease, that is the effect of this change, is not to be remedied, unless the immediate cause can be removed. And the Causes

occasioning these, may be very different, as hath been already proved, for it may be external to the Nerve ; or it may be in the Spirits themselves : Again, when in them, it may proceed from no real internal Fault or Change in them, but from some Fright, Surprise, Concern, or somewhat extraordinary and unusual, which suddenly or violently affecting them, creates disorders among them : Or it may be in that they are really in their very Natures altered or changed, so that they cannot perform their offices, as naturally they ought. If the cause then of disorders of the Spirits, or these Fits, be without the Nerve, that must first be removed, before such can be cured, but if it be within the Nerve, that is, in the Spirits themselves, they must be altered before that can be remedied : If it be only the effect of Passion, Surprise or somewhat troublesome from without, they will for the most part quiet themselves, the cause being removed ; however, they may, without much difficulty be composed by Art. But if such are the real Effects of altered, depraved or vitiated Spirits, so that they are in their very natures become unfit for their regular and orderly performances, they must be altered or bettered, before such Diseases can be cured : And the Spirits being made and separated from the Blood; can only be mended or changed by the Blood : So that in order

der to alter or better the nature of the Spirits, the Enquiry must be in what the Blood is faulty, and how to mend or alter that, so that in such Diseases of the Spirits, where the Blood can be discovered under no disorder; and yet they are derived from some depravity of them: The Cure is for the most part difficult: The reason of which seems to be, in that only this Separation by the Glands of the Brain is Faulty; which if it arise from some fault in the Vessels or Parts, transcends there our knowledge or skill to re-alter. And if from the Blood, we want a Clue to direct us in it. For I have proved already, that we can know nothing of the state of the Blood, but what we discover by the means of its Motions or Separations which are here supposed not to be altered. But having in the former Section said somewhat of the Blood, and shall in the following one say more, I shall here pretermitt it. And observe that the quieting or composing the Spirits; the ex-fuscitating or stimulating them into Motion, the hindring or altering them in their disorderly determinations, are, as I conceive, extremely differing from the altering, bettering or mending their unnatural and depraved state. For the former may, and is frequently performed by Medicines immediately Operating upon the Spirits themselves; but the latter is to be done no ways but

by the Blood. And that this is so, Experience abundantly confirms in several Cases, I shall only for brevities sake instance in one or two, Piercing or Fætid smells, but applied to the Nose, do so immediately affect the Spirits, as sometimes to put by an approaching, or suppress a Fit actually began; so likewise a large draught of cold Water will frequently repel a rising disorder. The effects of Opium are too nimble upon some Persons, to be communicated by the tedious way of the Circulating Blood. Some Steams or Fumes will too suddenly intoxicate to be conveyed any other way. But these, I think, are sufficient proofs that the Spirits may be affected immediately by Medicines, which is what I intended. And herein seems to be the reason of that marvellous difference that is usually met with in the remedying such Fits as have their beginnings in the trunk of the Body; and such as seem to have theirs in the Brain, or in some Muscular parts. For in the first of these the disorder begins in such parts as are contiguous to the passage in which the Medicine must pass, or at least communicate by the Nerves with them. So that the Medicine immediately of it self, or by its diffused steams, Operating upon the tumultuating Spirits, and by that means changes, suppresses or some ways hinders them in their disorders; and being as it were above them,

them, as being taken by the Mouth, or applied to the Nose, they do, as it were, keep them down from rising upwards. Whereas in the other kinds by reason of the distance of the parts where they begin to tumultuate from the Medicine, the interposition of consistent parts ; nor no immediate Communication between the Nerves here affected by the Medicine and the Muscular parts, they cannot Act or Operate upon them, but as they are conveyed by the Blood ; in which, and with which, being so entirely mingled, blended and confounded, it must undergo new changes, and perhaps acquire new qualities ; however, be it as it will, it cannot be so advantageously applied to the Nerve, where the tumult is, as thereby to suppress or hinder the disorder, as in the former Case : And all that can be performed by Medicine that way, must be by altering and mending the Blood, that the Spirits that are afterwards separated, may be bettered ; and this is not to be performed but by a long and continued use : By reason here although the Disease is in the Spirits, the cure is to be performed by long Ambages, a tedious going about, in altering and mending the Blood, from whence they are separated : And in doing this, it is clear we are to be governed by what we can observe from the Blood, without much regard to the Spirits that are affected, by reason they are

not to be altered here, but by that. And this seems to me to be the reason why Castoreum, Fætid Gums, Volatile Salts, and such things, that steam forth strong and offensive Smells, are ordinarily administred so successfully in Hyfterical Fits, that is, such as begin in or about the *Abdomen*; and to the same reason Galbanum Plasters seem to owe their Efficacy; and not to any specifick virtue of mending the Spirits, by reason they are rarely attended with such success in Fits that begin in other parts: Nor to any Magical, or I know not what power they have to respect the Womb, and so have acquired the name of Hyfterical: For neither the Womb, nor any other Organical part, hath any Motion of it self, but as actuated or moved by these nimble and active Ministers. Besides, these very Medicines may be successfully administred to the contrary Sex, when such have the misfortune to labour under Fits that begin in the *Abdomen*; and this is a Case not very uncommon, in which the Symptoms appear sometimes so very like those called Hyfterical in Women; that if the impropriety of the Word, in that Sex, was not a bar to the use of it, they would not be scrupled, by reason of their conformity even in the strictest sense to have been termed so.

XII. The Operations of these sorts of Medicine, upon the tumultuating Spirits, when they can be immediately applied to them, seem to be as regular, as even as that of the celebrated Cortex is in periodical intermissions of the Blood. But then they must not be administered at random, for the success of these, and indeed all other Medicines, not depending upon the power of the Medicine, but chiefly upon the due circumstances in their Applications. Thus sometimes the Virtue of the Cortex is eluded, for want of previous Evacuations. And thus may these be sometimes unsuccessfully given, by an omission of the same, when the Cause is without the Nerve. Furthermore, as the Cortex is only a certain remedy in disorders of the Blood, that return by paroxysms; so these are only so in tumults of the Spirits, that begin in the Trunk of the Body; and neither seem to extend their regular effects beyond such. The Cortex is experienced but of little or uncertain efficacy in Intermissions that seem to be derived from some cause existing without the Blood, which gradually infecting it, so disorders it as to create by turns paroxysms in it, as may be observed from intermissions in Consumptions: For although it will sometimes at first use give some check to the Intermitting Heat, yet it will neither be of continuance nor any farther advantage; by reason this noble

Drug

Drug is not enriched with a power to remove the cause of such, and that being permanent must again create it. So these in Fits that are occasioned by somewhat external to the Nerve, which is continually irritating the Spirits into tumults; if this is made in the Abdomen, although these will give some check to the ascending disorder; yet they cannot remedy such until that is removed. And this is not singular to these, but common to all other Medicines; for Medicines can only alter what then is, but cannot prevent what hereafter may be; hence no Disease can be absolutely remedied, unless the immediate cause can be altered or removed. And all Alterative Medicines exerting their powers upon one of the common Fluids, as has been proved, if the immediate cause of such disorders in either of them is derived from some extraneous Juice or Matter, separated or lodged without them, it is obvious that must be removed, or these cannot produce their genuine and desired Effects.

SECT.

SECT. II. CHAP. II.

HAVING briefly proved, that we are able by Medicine to alter, hinder, repell or suppress these active and nimble Instruments of all Animal Motion the Spirits, in their preternatural and tumultuating disorders, if they begin in such a region of the Body, wherein they may be immediately affected by the applied or administered Remedy, and more especially if it be so as the Medicine, being as it were above them, may hinder them in their ascent. It remains now according to what I there intimated to shew, that we are likewise able to compose and quiet them, to arrest and stop them, when unruly, or if you please to chain and bind them up when they are ungovernable ; and this not only to such as are the Instruments of Sensation and Voluntary Motion, which naturally seem only to require rest ; but also to such as are the Ministers to involuntary or vital Motion, and therefore do incessantly continue that, without which Life could be no more, and this we can do not only contingently or
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accidentally, but regularly, constantly and certainly.

II. Thus the great Author of Nature, although out of his infinite Wisdom, he hath not thought fit to perpetuate our Beings here, and therefore hath cloathed our Souls with frail, brittle and changeable Bodies, that are daily incident to such a variety of Diseases, Changes, Pains and Miseries, whereby our thoughts may be the better weaned, and our desires cooled from too earnestly longing after a tedious stay in these Earthly Mansions; and be rather enclined to look forward with a steady hope of enjoying that promised state, where we shall continue Eternally Blessed and Immortally Happy. But yet he out of his wonderfull Goodness, in compassion to our infirm Natures, whilst we are here, hath been graciously pleased to create for us, and to discover to us, a Remedy so Divine, that we may by virtue of it, be enabled to procure ease to our Pains, and Reliefs to our Torments. And this certainly, if well considered, may justly be numbred amongst the greatest of Earthly Blessings: For every rational Being must naturally desire Happiness, and no one can so far divest himself of humanity, as really to be Easie in Pain, or Happy in Misery; for that is what every such Being will endeavour to eschew, although by it he may sometimes plunge himself into
future

future destruction: Ease then, for without that there can be no Happiness, is what all Men naturally desire; how then ought we to value that sovereign Drug, by which it may often, in our greatest Torments, be procured; this is that never to be too much admired Poppy, or what flows or is extracted from it, Opium, or its Preparations.

III. But in order to reason rightly of the Operations of these Medicines, and their happy effects upon us, it will be expedient, as I humbly conceive, first to take a short view of our selves; and consider our Lives, as really they are, a sort of checquering or dividing time, between sleeping and waking; for it is certain there is in health a constant and successive Vicissitude from one to the other. In one, our Minds are always entertained with a continued train of Thoughts; the Inlets, the Senses, are open to the Operations of External Objects, some of the Muscular and Organical Parts are usually employed. Whereas, in a deep and profound sleep, there is none of these, the Spirits being as it were freed from their labours, and all parts at rest. In the time we are waking, our Spirits seem always moving in the execution of their natural Offices and Functions: But when we are sleeping they appear all still and quiet. Thus in the profoundest sleeps we rarely dream, the Avenues of the Senses being stopped, the
Spirits

Spirits giving no intelligence from thence ; neither do they convey any determined Motion into the Muscles, so that there is then within us an universal Night, for during this, the Mind seems enveloped in Darknes, being, so far as we can remember, neither then Conscious of Pleasure or Pain. But when the Spirits begin to be unloosened from *Morpheus's* Chains, or perhaps sometimes when they have never been perfectly bound up, that is, when our sleeps are not sound, (for it is most evident there are degrees in that) that some of these active Ministers seem to move and rove, then perhaps they will mould themselves into confused and incoherent Thoughts, which the Mind perceiving, is what we call dreaming ; and will then often give imperfect Intelligence from the Senses, and sometime create uncertain and promiscuous Motions in the Muscular parts, until such time as we gradually awake. This, or somewhat like this, I am perswaded every Man may observe in others, or experience in himself, if he will but heedfully reflect upon what passes in such a state. From all which we may conclude, that sleep consists in some rest of the Spirits, and the more profound the sleep is, the more quiet are they. And although these Spirits that immediately Administer to our involuntary or vital Motion, do never entirely rest, that is, cease their influx into those parts, by whose

Motion

Motion life is continued: Yet notwithstanding, their Motions by sleep are sometimes quieted, as may be frequently noted in Purgings, Vomitings, and also by Breathing, and the Pulse it self.

IV. This being thus premised, Experience assures us, that Opium or its Preparations will regularly and constantly, if administred in quantity, some ways becalm and quiet the Spirits, arrest or hinder them in their Motions, by composing or forcing them into sleep; and sometimes, if improperly given, or in too large a Dose, into a fatal one. This is the true, regular, genuine and certain effect of Opium, to bring a *requiem* upon the Spirits, by which the Mind is in some measure deprived of her Communication with the parts of the Body, and of course hath little or no perception from them, hence Pains are eased by it, our tumultuating Spirits being quieted. And this being done the Blood will circulate smoothly and equally, and the Spirits will be the better separated and prepared by the Brain; and all parts being then quiet, there cannot be that Consumption of them: So that our Spirits being thus at ease and recruited, we awake composed, comforted and refreshed, and here then Opium is a real Cordial. But if on the contrary exhibited in too large a quantity, or improperly, our Spirits being depraved, vitiated or altered, or are really low,
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broke and weak, that they are unfit or unable to perform their natural Offices, here by vainly endeavouring to compose them, we may extinguish them, and so instead of giving them a short *requiem*, we may give them an eternal one, in this case Opium is so far from being a Cordial that it is a Poyson.

V. The quieting, composing, or someways giving or procuring rest to the Spirits, is, as I conceive, the true, proper, steady and natural effect of Opium; and all others, if warily observed, will be found to proceed from this, as being concomitant to it, or accidental from it. This I think will clearly appear by a brief examination into the principal of them, which I shall consider under two heads. First, under such where Evacuations being encreased, are by the use of such lessened, hindred or suppressed. Or, Secondly, under such where Evacuations are procured, encreased or made by them. These at first sight will seem very contrary effects, and therefore not to be derived from one Physical cause; and yet if we will but heedfully examine into them, there is no opposition or repugnancy in them. By reason Evacuations are, as hath been already prov'd, of two sorts; one of which is absolutely performed by the Motion of the Organical parts; and the other, the effect only of Separation made from the Blood. The first of these
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is made by the Spirits actuating and giving Motion to the Organs, which therefore being quieted, the Evacuation ceases. But the second being only the flowing out of the Juices, that are separated and divided from the Blood, by reason there not being receptacles wherein they can lodge or continue long, they must necessarily be thrust or run out of the Body ; which therefore are by Opiums often encreased, as I shall prove. Thus in the first of these, Opium, under which term I now comprise *Laudanum*, and all Preparations from Popies, will often lessen and stop Vomitings, in that it quiets the enraged Spirits, which violently actuate, and forcibly move the Stomach into those Motions and Contractions by which it is performed ; for they, *viz.* the Spirits, being arrested or hindred in their Motions ; Vomitings, which are only the effects of such in the Stomach, must cease. The same likewise is performed in Loosnesses, the Rage and Motion of the Spirits in the Bowels being appeased, the Evacuations downwards, which is made by this, must of course lessen and stop. Coughing likewise is a violent and unusual Motion, occasioned ordinarily by some unwonted Separation from the Blood, which being extraneous and disagreeable to the tender Fibres appertaining to those parts, irritates them into that Motion we call Coughing, by which that very Matter that

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caused it, is usually removed from the part where it was offensive, and so is sometimes brought up by spitting, which is a frequent effect of it: Now when the Spirits are composed, quieted, or as it were, stupified by this Medicine, they are not so sensible of the irritation, nor so easily fall into that Motion. And that this is so, I think, is clear, by reason, that Coughing usually returns after the Efficacy of the Drug is spent, and then is ordinarily discharged such Matter that way, as by reason of its quantity or thickness, plainly discovers it hath been sometime a collecting, and had lodged before it was discharged; and this seems to be the reason why Opiates stop Coughing, and thicken, as we phrase it, the Phlegm or Matter, because although the separation of that Matter continues that caused it; yet the Fibres not being so susceptible of irritation from it, the separated Matter lodges, and the thin and watery parts steeming and evaporating with the Breath what remains to be brought up by Coughing, must become the more thick; which when the virtue of the Medicine is spent, or the quantity of the Matter so far encreased that the Fibres are again solicited into that Motion, it is then brought up that way; by all which it appears that these are only the effects of the Spirits thus quieted.

VI. But on the contrary, Evacuations that are the immediate effect of Separation, are rather encreased than lessened by it ; thus Sweats are often caused by the use of Opium, and sometimes the quantity of Urine is enlarged ; the reason of which seems to be in that where the Blood is disposed for Separation, the slower it moves the more it separates ; and its Circulatory Motion depending upon the Vibration of the Heart and Vessels, and that being made by the Influx of Spirits, this Motion will be as that Influx is. And that these Evacuations proceed from that reason, seems probable to me, in that these are not regular and constant effects of it, but only accidental ; and by reason these very effects may be and are in some other Cases produced by the means of some affection of the Spirits ; as is most notorious in those Sweats and profusive quantities of Urine, that do frequently accompany Faintings, Swoonings or Hysterical Fits. Besides there is another reason why Opiates so often occasion Sweats, for being usually given in Bed, in which posture Men commonly compose themselves for sleep, and the Spirits being quieted by the Medicine, and the Body continuing in one unmoved and warm state, it can be no marvel if it Sweats, since we may observe but few Persons that lie warm, and sleep quiet and sound, but will then gently perspire by the Pores of the

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Skin ; because those passages being open, not as occluded by any external cold, and the Blood being invited by this outward warmth to move freely that way ; and the cutaneous Fibres perhaps, by the same reason, relaxed, do thereby give a greater freedom for the Serum to pass.

VII. This is farther to be observed in the use of Opiates that although they undoubtedly some way compose and quiet the Spirits, yet that happy effect is not often of any long continuance ; by which we may infer it doth not better or mend them, by reason it only makes a Truce, but no lasting Peace, unless when the indisposition is entirely from some present disorder in them, but not from any corruption or depravity of them : For if it be from any other cause that must first be removed. Hence it is when their disorders are created by somewhat external to them, the virtues of Opiates are somewhat uncertain, and not lasting ; unless Evacuations precede their use. Nay farther, when their tumultuation, disorders or irregular Motion, proceed from any change or corruption of their very natures, as when they accompany any notorious change, disorder or commotion of the Blood, from whence being separated, they must naturally be tainted, vitiated or altered, as that is, and as we see the visible separations are : And being then in their very

ry natures altered, their Functions, Actions and Operation must necessarily become so too ; because they not being as they naturally are, cannot perform such as they naturally did, and so of course all such must be perverted, that is, they will not be as before they were, as it is most evident they are not ; the Intelligence they bring from the Senses being perplexed and imperfect, their outward Motions unsteady, involuntary and tumultuous, their representations to the Mind confused, monstrous and dreadful, as may be commonly observed in such Diseases as we call *Mania's*, *Phrensies*, *Deliriums*, and such like ; in which what confused Ideas, what frightful Visions, what incoherent Thoughts, and sometimes what Convulsive Twitches, Tremblings, Inquietudes, and many other uncommon and surprising Symptoms, which would be superfluous to enumerate, these being sufficient. Here Opiates by somewhat composing and quieting these thus vitiated Spirits, may seem to give some check to such dreaded disorders, for such a time as the virtue and power of it continues, because sleep is a kind of Cessation of their Motion, and these Symptoms spring from that disordered ; but then, as I apprehend, such Medicines never better, alter or mend them, by reason they return when once freed from the chains of the Drug, and never entirely cease until the

state of the Blood is altered; this is most apparent in *Fevers, Small-Pox*, and such Cases; where Opiates, if given in quantity will have their natural effects, yet by them, the dreaded *Phrensies, Deliriums, Convulsive Tremblings*, are never, as far as I could observe, cured: It is true, when the Blood begins to alter, and gradually to recover its former state, which usually appears to us by the happy, although small, Alterations that may be observed in the Motions or Separations; Opiates then administered will assist these, for reasons already assigned, and so will as it were at once perform that which otherwise might have required more time.

VIII. The so general administration of Opiates in the Small-Pox, being a practice of a modern date, introduced with a regimen somewhat different from what had been formerly used in that Disease, hath often given me an occasion seriously to reflect how far the genuine Symptoms in that Disease, may reasonably induce us to the so promiscuous use of it: But that I might not proceed precariously in this Enquiry, I tied my observations and reasons to such things only as are common, obvious and certain. There is perhaps no one Disease, wherein Men seem better agreed, what goes to constitute its Essence (pardon the word) than the Small-Pox, by reason consisting in some external appearance, it becomes of it self under

under the cognisance of our senses, so that what it is they have a direct knowledge. Neither is there any difficulty or doubt from whence these Pimples or Eruptions upon the Skin (that are what to us constitute the Disease) derived : Their nature, colour, manner of appearance, their growth and maturation abundantly proving, that they are separated from the Blood ; there being in truth no other Juice, from whence they being so universal, can be separated, neither can such unusual Separations proceed from the Blood, but that must be under some marvellous disorder, commotion or change ; which may be farther confirmed by the Symptoms that usually precede these Eruptions : And that this must have some cause, which seems to be by the intromission of some very unlike, disagreeable or incongruous Matter into it, which is confirmed in that it is infectious, being, as is most notorious, often taken from one to another. Thus far then, I think, is certain, that the Blood is first affected, that these unnatural Eruptions upon the Skin, that to us make the Disease, are separated from thence, from whence likewise all natural Separations are made : So that the Blood in this Disease being so much altered and corrupted, what proceeds from that will likewise be someways altered or depraved ; so that the concomitant Symptoms although some of them are not immediately

diately founded in the Blood, yet notwithstanding are primarily caused by that, which evidently appears in that they begin and end with the Disease, as is particularly plain in such as are proper to the Spirits, which gradually lessen and vanish, as the Disease declines, that is, as the Blood recovers its former state. Now if the proper and regular Operation of Opium is only a power of quieting, composing or stilling the Spirits; and here although they are tumultuous and disorderly, yet they become so, as being depraved and altered in their very natures, by reason now they are separated or made out of a vitiated and poisoned Blood, whereby being thus changed they are unfit to perform their regular Offices, so that they must be in some disorder and confusion, as appertaining to their present corrupted state. And Opiates not bettering or mending the Blood or Spirits, but only for a time quiets and composes them, its so promiscuous use in this their so depraved, broken and weak state, may sometimes instead of stilling them extinguish them.

IX. But to render what I intend the more intelligible, it will not be improper to take a short Historical view of this Disease, but that no farther than as it may relate to what I am now treating. It is to be observed then, that the beginning disorders in this Disease usually appear in Pains of the Head,
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Back, and sometimes in the Limbs or Sides, and likewise in Sickness, nauseating and Vomiting, and such like, all which do in some Persons upon the Eruption of the Pimples lessen, and gradually vanish; and where these things succeed so favourably, there may usually be observed a marvellous disposition to Sweat; and the Pimples appear ordinarily separate, rarely conjoined or in Clusters; for which reason they are termed the discrete or interstinct kind. Now in this Case where the beginning Symptoms thus lessen upon the eruption of the Pimples, which is most commonly slow and by degrees, by which manner of separation the poysonous and offending Matter seems to be exterminated the Blood; but being in its nature unfit to pass the Pores of the Skin with the Sweat, it there stops and lodges, and being supplied with new Matter from the circulating Blood, it gently increases, heats, inflames and swells, and then suppurates and becomes what we call Pus, Matter, Corruption or Quitter, which being in the Skin, and in small and separate parcels, the thinner parts waste and evaporate, and the remainder dries, crusts or scabs, and then falls off. All which circumstances may be found in Pimples, bearing other denominations, which if small, distinct and cutaneous, do keep the very same steps in their appearance, heating, maturation, crusting, scabbing and falling off; although they

they do not observe the same, nor so regular times, nor are not always preceeded by so sensible disorders. Neither is the Small Pox always so regular in the time or manner of its appearance; neither doth it always keep so certain steps in its maturation or scabbing, as some have represented it.

X. But on the contrary, if upon the eruption of the Pimples, which seems to be the best and most natural way, whereby the Blood separates and exterminates this poyson, the preceding Symptoms do not much remit or lessen; and which are usually more violent than in the former: It is evident, I say, by that, that the Blood does but imperfectly separate, part or exterminate the poysonous and offending Matter that way; and here we commonly observe the Pimples to break out confusedly, hastily, in clusters, and conjoined, so that encreasing they run together, from whence termed the Confluentes or Fluxing Pox, and these are often differing in colour, rising and maturation from the former. Now here the natural separation by the Pimples being but imperfect, the whole poyson or offending Matter not being well separated or exterminated that way; the Event of this is always more doubtful and dangerous. For the poyson not being clearly expelled by the Pimples, which appears in that the preceding Symptoms are not by their Eruptions enough mitigated or lessened;

lessened ; a second separation may not unusually be observed to be formed by some of the Secretory Vessels, and that is most commonly by the Salival Glands, as may be generally taken notice of, by the Spitting, soreness of the Throat, and swelling about the Neck and Face ; and likewise some offending parts seem to be left in the extream parts, as Hands and Feet. And it is very remarkable, generally speaking, that the greater the Evacuation is by Salivation, the smaller and thicker the Pimples : And the more these parts swell, and the longer they continue so, the better and the safer the Diseased. And it is farther to be observed, that if in these Cases the swellings do not rise, or if being once risen they recede too soon, let the condition of the Pimples be never so hopeful, the case usually terminates fatally, so that in these dangerous Cases where the poyson seems so imperfectly separated by the Pimples ; our principal intentions should be the guiding and governing these second separations, these being experienced to be the ultimate receivers of the poyson ; for if it can be this way exterminated, as we are plainly taught it may, by reason if these rise in proportion, and continue their due time, experience teaches us, the Diseased may be in safety, notwithstanding the unpromising condition of the Pimples. By which it is evident to me that the safety in this Disease

Disease must entirely depend upon these two things, first the separation and extermination of the poyson, from the rest of the Mass; and secondly, the keeping or retaining it so when it is once separated, that it may not be again re-admitted to poyson and infect the Blood. It is this second that is ordinarily occasioned by the secondary Fever, as I shall shew anon. The first of these is commonly and best made by the Pimples, but where it cannot be perfectly made that way, then by these swellings, which are the last receivers of it; and by these it is sometimes exterminated, altho requiring a longer time for it, and it is plain to answer this intention (if attended with no other Symptoms that require it) Opium cannot directly contribute any thing. But to the second it may, as shall be shewed hereafter. These dangerous Symptoms attending such Persons, who by reason of their Age, Vigour, manner of living, have heated, inflamed or some-ways corrupted their Blood; whereby the commotion once began, becomes violent, and the Natural Separations quickly perverted and confounded: And then the separation that should be by the Pimples, not being leisurely performed, they appear confused; for the offending or poysonous Matter being variously thrown, sometimes these ways only, and sometimes more unhappily by the Bowels; by reason a separation began that way,

way, may be violently continued by their Motions, by which means that very part of the poyson that was lodged in the Skin, to form Pimples, or deposited in the other parts, may be again received into the Blood: Whereas there is not the same danger by the others, *viz.* the Salival Glands, Hands and Feet, the poyson there deposited not being to be removed from thence by any Organical Motion, as it may be by the Bowels, as I have formerly proved. But to return, the parting, separating or dividing of any poysonous, offending or morbidick Matter from the rest of the Blood, is an act purely natural, it being only to be performed by the small constituent parts of it, whose natural Motions are not to be guided or governed by any humane skill, so as to direct or foreknow what parts shall be separated, as I have shewed formerly. All therefore that Art can do is only so to dispose it, that it may the better separate, or to regulate it when it is separating. Now Observation hath taught us, that violent and impetuous Motions are always a hindrance to Separations in all Fluids; so that if we can but hinder, lessen or retard that, we do thereby give leisure and time for it; and this where the Blood it self is first affected, must be by lessening the quantity of it, because the parts do not break and divide, so that in this Case, if the Mo-
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tions are violent, and the swellings do not succeed well, bleeding and in quantity is the most reasonable Remedy. And such things only internally permitted that will retard, or at least not encrease the commotion; and then perhaps some external applications to those parts that are the usual receptacles for the second Separation, whereby they may be gently solicted to receive the offending Matter, when the Blood is disposed to part from it; and this, as it appears reasonable, so have I experienced it with success. But why Opiates should be so promiscuously administered, I cannot comprehend, when the first danger appears to be in that the poysonous or offending Matter is too powerful, or the commotion is too violent, for which reason the Blood cannot separate from it, which Opium does not by its effect seem to perform. It is true it does sometimes produce Sweats, but then unless the Blood is predisposed, there is nothing Peccant eliminated by such; and if not, what is their use; neither has it been ordinarily permitted to encourage Sweats, by such as so liberally in such cases give it. Nor indeed does there appear any reason for such a discharge; for the poyson hath now altered its course, and doth not seem to tend to the Skin, but to the swellings, from whence it wafts, so that to change its course, is to endanger
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the Diseased. But notwithstanding what hath been said, there is a time, and that in the very natural progress of this Disease; (besides, what particular Indications may require in it) wherein Opiates may be of most excellent use, and that is when the Pimples and swelled Parts become inflamed, throbbing and painful, by which the Spirits may be put into rage, and so become restless and tumultuous, whereby dangerous Evacuations may ensue; or the Blood may be so intended in its Circulatory Motion, that the poyson that was safely deposited in the swellings, or about the Pimples, may be again gathered up and received into the Blood; and so that being farther poysoned by it, may produce fatal Symptoms, and this is what is effected by what we call the secondary Fever; which therefore may sometimes be prevented by Opiates, not by directly keeping up the swellings, but by hindring that rage of Spirits that might have been created by the Disease at this time. For they being composed, or, if you please, stupified by Opiates, will not be so susceptible of such disorders. There are many particular Cases in this Disease as plainly require Opiates, as in violent Pains, or where Evacuations that are made by the Organical Parts, are improper or dangerous, so that there is a necessity to lessen or stop them; but by their so promiscuous

miscuous use, I could never yet observe any real advantage. But on the contrary, that they have so dulled and stupified the Spirits as that they would not be irritated into Motion, when it becomes necessary, in order to discharge that nasty Slough or Phlegm that being lodged about the *Fauces* should have been discharged by the Mouth. Hence sometimes have been derived those fatal rattling *Stertors* in Breathings, those passages being so lined and stuffed with this foul Matter that becomes more thick and tenaceous by its continuance, for want of a Motion whereby it might have been excreted. Besides, the Spirits being by that great change and corruption of Blood become unfit regularly to perform their Offices, their Motions being weak may be so oppressed and chained up by Opiates, as never to free themselves from such fetters. In short the so plentiful use of Opiates may give some Reputation to the Physician, by reason it gives ease to the Attendants, but not always safety, although it gives sleep to the Diseased.

XI. It is not improbable Opium hath undergone the common fate of other Medicines in that its regular and certain Operation hath not been distinguished from its accidental Effects. For when a happy Effect hath succeeded its use, it hath immediately

diately being attributed to its genuine Operation, when perhaps it flowed from a very different cause, and indeed in this it seems to have out-stripped most other Drugs; for what uneasie Symptom is there appertaining to any Disease, but may have been experienced to have been eased by it; for its certain Efficacy or Operation, consisting in a power of quieting the Spirits, by which means Pains, Uneasinesses, Inquietudes, the usual Attendants of most Diseases, are mitigated: The Diseased, who always covets present ease, and commonly measures his safety by what he feels: And his Friends, who usually judge of it by his rest, or want of Complaints, generally commend and approve that Medicine that performs these great things, and desire its repetition; when perhaps in some cases by so doing he may be by easie steps removed by each Dose a degree nigher the Grave. For these reasons I am apt to think Opium hath been oftener misapplied than any other Drug.

XII. I shall only say one thing more of this sovereign Drug, that it is by Nature so divinely prepared, that it is not to be bettered in its specifick power of composing, and giving a *requiem* to the Spirits, by any pompous process, tedious, artful or elaborate preparation, but it may be by

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such lessened and almost stripped of it ; and this under that specious pretence of freeing it of its malignant qualities ; whereas these consist only in its power of quieting or chaining up the Spirits, so that to divest or spoil it of that, may certainly make it a very harmless, but yet at the same time a very useless remedy. For all as can be expected by its Preparations seem to be principally, if not only, in a conveniency for a form of giving it, besides, that it doth not readily dissolve in all Liquors, for which reason they ought to be adjusted, that it may the better communicate its effects.

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SECT. II. CHAP. III.

BUt to return from whence I have made so long a digression, to a farther consideration of the natural, regular Functions, Actions and Operations of the Spirits, that by duly weighing and comparing them, I may be the better enabled to explain their preternatural changes, tumults and disorder; for without a right understanding of the former, the latter are not to be comprehended. But that I may not nauseate my Reader by a tedious repetition of what hath been said, I shall here only remind him, that all the Actions, Functions and Operations of the Spirits, are but the Effects of their Motions, and that they, in respect of their determinations are but of two sorts, the one of which is inward, the other outward, that is, one is from the Organs to the Brain, the other from the Brain to the Organs; and that by the different Modifications of these, all Sensation and Organical Motion is performed; so that when these are regular and just, those as the effects of these are natural: And these must be as the Spirits are, so

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that if they are altered or perverted, those must necessarily become so. And having already briefly touched at such indispositions of them as are most dreadful, under the names of Apoplexies, Epilepsies, Lethargies, Convulsions, Fits, and such like. It only remains that I hint at some others that belong to the same tribe, but being more common and less dangerous, are not so much regarded.

II. And these are what according to the modern Phrase are called Vapours, which being derived from the same source, *viz.* the Spirits, seem to differ only in this, that where the Symptoms are only slight and troublesome, they are termed Vapours; but when more frightful and surprising, Fits, or by some other name. It is true Fits sometimes are occasioned by something external to the Spirits, solliciting or irritating them into such sudden disorders; whereas Vapours seem only to consist in a certain state and condition of them, and in nothing external to them. But that this uncertain and undermined word may not lie too much at large, and undistinguished, from those Diseases that are taken to be comprehended under other names; I shall hence only intend by it, any slight disorder of Spirits, arising from an ill state, weakness or depraved habit of them. For if such are become surprising and formidable, I think they are usually ranked

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ed under other denominations. This I must own is a very loose description ; but a word taken in so many and so uncertain significations, will scarcely permit of a better. For by the modern use of this word is not denoted any one or more determinate Symptoms, but is as extensive as the very Operations of the Spirits, for wheresoever there is discerned any slight and unusual disorder in them, it is immediately signified by that Expression. Thus if the mind is clouded with any black or melancholly Ideas, or darkened with any despairing or dreaded Apprehensions, or if affected with any succession of incoherent Thoughts, if such things are but of short continuance, so that the Mind recovers its former state, by being able to discern and discover the vanity of such ; although these sometimes repeat, yet here they are called Vapours, whereas had they continued they would then have acquired another denomination. For the nature and temper of our Thoughts seem wonderfully to depend upon the state of our Spirits, and those upon the Blood, from whence they are derived, hence they vary and change, as our Tempers do; for how imperfect and confused are our Thoughts in Fevers, how wild and incoherent in Lunacies, how black, despairing and dreadful in Melancholies, and sometimes how established and fixed upon a particular thing : In these most unhappy condi-

tions we plainly see these ministers of the Mind, are become unruly and ungovernable giving false colours, and misrepresenting every thing, so that the Mind cannot rightly distinguish. But to return, when any slight disorder is perceived in Sensation or Organical Motion, whether in the Voluntary or Vital, or both, it is usually dignified with the Title of Vapours, thus risings to the Throat, shortness of Breath, palpitations of the Heart; thus slight Convulsive Twitches, Catchings in the Muscles, and so forth, are often called so.

II. But in order to discover a reason of this unhappy state of spirits, it will be necessary to take a short view of the condition and manner of living, of such Persons as are most usually afflicted with them; for by that means we may gain some light to guide us in a regiment for the remedying them. And, I think, most of them may be observed to be such, as are either by virtue of their Circumstances necessitated, or by means of their Educations accustomed, or by their Births, Fortunes or Qualities enclined to lead an easie, unactive and sedentary life, not ordinarily employing their spirits in Muscular Motion, that is, do not habituate themselves to bodily Exercise, whether in play, business or otherwise; but are by necessity compelled, or by choice too much indulge a sedentary and unactive life.

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This seems to be the first and general cause, and not from any Circumstances in Diet, by reason Persons that so extreamly differ in that, are promiscuously affected ; for it may be observed in Cottages as well as Palaces, where the Female Inhabitants get their Bread without much stirring.

IV. For we being so divinely constituted, as that most excellent part the Mind hath a power to actuate and move our Bodies, but being confined to a particular residence, uses these spirits to convey her determinations to this or that part ; as likewise by these she receives Intelligence from thence ; and her power being only limited to the using and employing these, and not the separating or making them, she can only have them, as prepared for her. Hence it is that if that Fluid from whence they are derived, is changed, depraved or corrupted, these become unfit regularly to perform her Commands, or their own Offices, as I have formerly proved. Besides, if they are not employed, they will, as it were, employ themselves, their very nature or state requiring it, when we are waking, as every one may experience ; for then we have a continued train of Thoughts, our Senses are open to the Operation of external Objects, and some parts of our Body are moving. However, the communicating and giving Motion is a proper business to them, and if they

are not employed in that which consists in their tendency outward, that is, from the Brain to the Muscles they will by a neglect in that become more prone to return inward, that is, from the outward parts to the Brain, as being most used to that ; by which means their natural order being broken, such a legion of Symptoms as are intended by the word Vapours, are formed : A Disease in some truly miserable, in which the Diseased really are, or at least think themselves always a dying.

V. It is farther to be observed, that although this unfortunate state is for the most part imperceptibly brought upon us, by our own, or by the faults or follies of others, by a defect in not using our Bodies to Motions that would have been both for our Pleasure and Health ; for had our Spirits been this way employed, they would not by recoiling inward so often mould themselves into such unhappy Thoughts : Yet afterwards our very Bloods and Juices will by that neglect also become depraved : For the circulatory Motion of the Blood being made by them, if they are disordered, that will be so, whereby its Crasis and Mixture will become weak by reason it is not forcibly enough impelled forward by that. Besides, by the Muscular Motion, the parts of the Blood seem to be exagitated, moved, and of consequence the better mixed, whereby its
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mixture is preserved entire, its parts being hindred from dividing, the truth of all which undeniably appears in that it quickens and encreases the Pulse, creates heat, the Blood being forcibly impelled to the surface, which is farther evident in that the Body becomes by it, hot, moist, and stained with a scarlet Dye. Whereas, in an unactive and sedentary life, the Blood receiving no accession to its circulation by Bodily Exercising, nor its component parts not being exagitated by such, how apt are they to part, break, and immaturely to divide, from whence divers Symptoms accompanying such a manner of life seem to be derived, as white Tumours, fullness, swellings, obstructions, hindrances in some, Separations and Enlargements in others, pale Faces, sickly Looks, want of Stomach, universal Languor, and a legion of particular infirmities. And the Spirits themselves in their very natures grow depraved and altered, as being now derived from so corrupted a source, that they really are unfit and incapable to perform their natural Offices, by the pretermiffion of which perhaps Originally, this Iliad of misfortunes enter'd.

VI. From whence it will follow that as these Symptoms or this Disease proceed in that the Blood hath not been sufficiently moved nor exagitated. So then the remedying of such must consist in the doing of
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of that; which must be performed by one or both of these ways:

First, Either in renewing or frequent repeating Bodily Motion, which is external to the Blood, being to be performed by the Spirits actuating and moving the Muscles.

Or, Secondly, by something internal, which being received and admitted into the Blood it self, hath there a power or virtue to give, as it were, a new Life and Motion to it that appears so languid and sluggish. But the first of these is found for the most part impracticable, for a sedentary and easie life, being by a continuance become habitual and so pleasing, it cannot, without great difficulty and uneasiness, be overcome, and Persons labouring under these Circumstances too often deter themselves from such attempts, by thinking they are unable to perform them. Wherefore recourse is for the most part had to internal Medicaments, hoping to find that relief from them, which their own doubts or fears will not permit them to take from Bodily Exercise; or at least now by so long a continuance are not to be recovered that way. Amongst the most celebrated remedies commonly used in this Case, Steel hath not undeservedly gained the first place, as being usually the principal Ingredient, although in very differing Forms and Preparations, in most of these Prescriptions.

VII. Steel then and its Preparations being to be comprised under that sort of Medicines termed Alteratives, It may not perhaps be an useless pains seriously to enquire after, and warily observe its Operations, and in doing this to keep close to the formerly mentioned rule, in heedfully distinguishing between its certain and regular Operations, and its but accidental or contingent effects. But to do this the more distinctly, we ought to consider, that all Alterative Medicines must either exert their Powers or Virtues immediately upon the Spirits, as I have already proved : Or else upon the Blood, into which they must be admitted. And Steel not being a fugitive Body, emitting any strong Emanations, is not observed directly to affect the Spirits, as some strong Volatil or Fætid things do. But it may be always observed when taken inwardly (if it but lodges in the Body) that is, doth not some way work off ; that it will powerfully affect the Blood, into which after it hath been received in sufficient quantity, it never fails to exagitate it, as may be collected by the heat it creates the natural Effect of that, so likewise it quickens and invigorates the Pulse, the circulatory Motion being intended ; and these its effects appear further evident by the frequent Eruptions it makes upon the Skin, by the turgency of it in its proper Vessels, by that warmth and colour it gives to the Face
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and Surface, and by the hindring Separations that appear to be the effects of its slow Motion; and in short by its assisting and encreasing whatsoever proceeds from a brisk agitation of its parts: By this means it promotes Bleeding, whether in a natural way as by the Menstrua, or in an unnatural one by any other passage, and likewise gives a colour and consistency to the Blood, as may be observed by comparing of it, before and after its use. Hence Steel is a true and real Specifick, in those Diseases that arise from such a weak and debilitated state of Blood, that are to be remedied by thus invigorating of it. But if such Symptoms that are common to such a state of Blood, are occasioned from any other cause that is external to the Blood, as by any formed Tumours, or any extraneous or disagreeable Matter continually admitted into it, it will be found but a trifling and ineffectual remedy, unless that cause can be first removed. But if the cause of such is immediately seated in the Blood it self, that being only degenerated into such a low and sluggish estate, although the native Beauty is changed, Colour lost, Stomach depraved, Separations encreased, as in Urine, and Spittle, Spirits weak, Strength decayed, Flesh consumed or wasted, and an universal Languor over the whole Body, yet these and many others proceeding from
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the same cause will most undoubtedly be remedied by Steel if it be duly and judiciously administred. But if after the Blood hath acquired its former state, that is, all the Symptoms are vanished, if Persons must be enjoined to an unactive and easie life, or if they will indulge themselves to it, and will not use their Limbs for such uses as God hath fashioned them for, and what experience so plainly shews, does so marvellously contribute to both Health and Life. And if their Bodies must be so pinched and crowded by their Stays, some parts being thus unequally pressed, that the Blood cannot move equally, it can then be no wonder if their Healths being this ways destroyed, their indispositions return; and not only so but they must often nourish unequally, and thus forsooth, by a fashionable endeavour to give an artful shape, we destroy a natural one; raising them into deformities, that by a trifling sort of reason we would have prevented. For it is observable amongst those miserable People, who we esteem Barbarous, where Nature is left in shaping their Bodies to act in her own way, there is rarely if ever seen any such, nor such wretched unhealthy Constitutions; so that it can be no marvel if such indispositions do gradually return; for the great end of Medicine is the remedying present Evils, and thereby the restoring lost Health; the preventing Diseases principally depend-
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ing upon our own Conduct : Which methinks is notoriously evident, since we can neither evacuate nor alter what as yet is not ; for of a non-Entity there can be no Affection. But if Steel is at random prescribed in promiscuous Cases, where the Symptoms are derived from some other Cause, and not from this intrinsick ill temper of Blood ; it can be no wonder if we are deceived in its effects : since it is exhibited in such a Case as its certain Operations will not warrant.

VIII. If therefore by the use of Steel we intend the mending or altering the depraved Spirits, we must endeavour it by the means of the Blood, and in doing that we are to regard the Blood it self, and consider whether the state of it is such as can be remedied by Steel ; for if it is not, we seem to give it to little purpose, since the Spirits are only to be bettered that way. And such may be the state of the Blood in such Cases as are termed Vapours, as not to indicate or require its use. For we may observe Persons afflicted with this disorder of Spirits, who by too liberally indulging the use of Wine and strong Liquors, and too poignant and spicy things have thereby attained such a state of Blood as renders Steel not only an useless but a hurtful remedy, because Steel will but encrease the ill effects that these have made ; they both in some measure heat-
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ing and exagitating the Blood, although the Effects from Steel are somewhat more powerful and lasting. If then by the use of such things our Native and Healthful Temper is destroyed, and so our Spirits are perverted, we shall in vain attempt to remedy them by Steel. For although all slight disorders of the Spirits are comprised usually under that common term Vapours; yet if we look into the Temper of Blood that attends these, and by which the Spirits, the Instruments of such, are only to be bettered; we shall often find it extremely different, and therefore not to be remedied by the same methods. But by reason what we term Vapours do so usually attend that state of Blood, that is, so effectually mended by Steel, it hath acquired a mighty reputation in that Disease. But because its effects in its native dress are so notoriously hot and hurtful in some of these Cases, Men seem to have applied themselves to the torturing of it by Preparations, hoping by that means to strip it of such its noxious qualities; and only preserve that part of it that might be always useful and advantageous; that so it might be indiscriminately administered, in all Tempers where the Disease was thought to be the same, that is, had the same name, for that seems to have given the Identity to Diseases. Some of its Preparations, although excellent Medicines
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in proper Cases, yet are so far robbed of the native qualities of unprepared Steel, that they have acquired new ones directly opposite to the former. And where such of its Preparations as retain its native Virtues, may be with more advantage administered than gross Steel, as being less offensive to some tender Constitutions; there I think Mineral Waters may in the general be substituted, and that at any season of the year. It is true there may be Constitutions so very tender and nice, that notwithstanding their Circumstances indicate the use of unprepared Steel, yet they cannot bear it; here Chalybeate Wines and Tinctures, as coming near to the gross, may be successfully used; by reason they pass into the Blood without giving disturbance.

IX. But neither Steel nor its Preparations, Mineral Waters, or any other Medicine, can cure that, that is daily caused. For if we ransack the *Indies* for Spices, and the most remote parts for Foreign rarities, if all Countries for variety of Liquors; and if we will esteem these for pleasant, because rare, and wholesome, because we like them; if we will value nothing but Exotic Toys to tickle our Palates, and strong and spirituous Liquors to please our Head: if we will wantonly eat when we have no desire, and drink when we have no list; if we will forsake simple and wholesome Diet, and be pleased with
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nothing but what is a medly of Compounds: And if we will study more to gratifie our tastes, than to satisfie our wants, and delight in nothing but Excess and Irregularities. And if with all these we will continue in a lazie, sedentary and unactive Life, that is, will not use our Limbs in such ways and for such ends, as they are suited for by the great Author of Nature; or at least if we cannot, by Reason Fashion, Custom, State or Grandeur, have obliged us so to manicle and confine our Bodies by our Garbs that they are unfit for such Motions; it can be no wonder if we bring upon our selves an infirm habit, a wretched and unhealthful temper, when all we eat and drink and do contributes to it. In vain then we apply our selves to Medicines, to correct what is daily occasioned by our manner of living; for the power of Medicines are circumscribed, they can only alter or mend what then is, but cannot hinder or prevent what is not; when a Cause is every day administred from Irregularities, Intemperances, Excesses or Confinements, for I may with equal reason expect by yesterdays Physick to prevent a Man's being Drunk to day, although he ingurgitates immoderate quantities of strong Liquors to occasion it, as I can by that, to prevent Diseases that are every day forming. Nay, our luxury renders some things useless and ineffectual; thus the Cordial Virtue of

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Wine is lost by the intemperate use of it ; thus poignant and spicy Drugs are not Alteratives where Habituals. It is true we may sometimes in Diseases find their wants but then as part of our Food, and not as Physick. Thus do we usher in a Legion of Miseries that are not to be remedied, unless we alter our manner of living. And this Physicians seem to have been very sensible of, when they direct some party and small changes in Diet or Drink, when they forbid Salt or Vinegar, and substitute Water instead of small Beer, or perhaps enjoin the forbearance of Malt Liquors ; and in these perhaps they may be complied with, by Reason, State, Fashion, Custom or Use, hath put no value upon such ordinary things ; whereas should the Injunction have been carried farther to the renouncing of their darling Liquors, or modish way of Living, the advice would have incurred the censure of being too severe, either to be submitted to, or followed. But methinks Men have been too hard upon Small Beer to condemn its use, before they have heard its cause ; for it may, for ought I can see in its charge, be innocent, notwithstanding the so common and prevailing prejudice against it ; although a good name undeservedly lost, is not easily recovered. For perhaps in its defence it may be justly asked, why that should be thus branded with the infamy of being the

Corruptor

Corruptor of our Bloods, the Sourer of our Juices, the Depraver of our Spirits, and in short, the Defiler of our Tempers: When often it is little in use amongst such where it is most complained of; but however, how does it judicially appear only culpable, when Meats and other Liquors are every day promiscuously used, and how then are the Effects of that to be distinguished from others, whereby so to condemn it? And not only so, but it looks very unjustly to arraign and stigmatize that, as the only Cause of such mischiefs that are rarely to be observed in such Persons as seldom use any other than this harmless and inoffensive Liquor: This sure is to condemn the innocent, and to acquit the guilty; for if this Liquor was truly to be charged with these Crimes, how comes it to pass, that those Persons that drink always of it, are not most afflicted with them, which it is certain by fact they are not?

S E C T. III. C H A P. I.

IN the former part of this Discourse, I have proved these two things. First, That all Diseases must proceed from Fluids ; and Secondly, That there is a great variety of them in a humane Body : Some of which for distinction sake I have termed common, and others appropriate. By reason then of such a number of them that are congenite and natural, all which will be subject to Alterations ; besides, several others that are preternaturally made by the Bloods casting out somewhat upon a part, that is not naturally befitted to receive such separated Matter. And Diseases having been usually denominated, that is, made a particular Species, either from the part affected, the manner of affecting, or from what hath been esteemed the efficient cause, or from the suddenness or the surprising in the seizure, or from some principal Symptom or visible Appearance ; It can be no wonder if they are marvellously multiplied, nor if new sorts or kinds are discovered or made ; that is, that some Symptoms are now combined under a common name

name that were not so formerly ; and so constitute a new Disease, as I think may be particularly instanced in that now so common one to Children, *viz.* the Rickets ; as likewise what often happens in Epidemical Cases. But then by reason it is not precisely determined, nor exactly agreed, which, or what number of Symptoms must be taken only to constitute the Species, with divers other Circumstances that would be necessary to establish a clear and certain knowledge of it ; it can be no wonder if the name intended to signify such a Disease is often very loosely and uncertainly taken. I think I need not give many proofs of this in particular instances, it being so very notorious in those common, and, as it hath been thought, well known Diseases, *viz.* Fevers, Scurvey, and many others.

II. And it seems to me to proceed from this reason, that so many complications are continually observed to happen : for where a great variety of Symptoms co-exist, some only of which having been usually combined under one common name, and so considered as a distinct Disease ; which now being associated with others that have not been comprehended under that term ; it is called a Complication, as not having any one word whereby to Express these together. And by reason each Disease hath had its method of Cure ; and

two or more are now thought to have seized the same Person ; unexperienced Men have been in such Cases somewhat perplexed, not well knowing how to govern themselves ; by reason what hath been esteemed proper and useful in one Disease, has sometimes been thought prejudicial and hurtful in the other. Whereas, if we but rightly consider, that all that number of Juices, as well such as are congenite and natural, as such as are preternatural, are nothing but Separations from the Blood, and that they are in no other ways internally to be altered, but by that, (except what I have proved as to the Spirits) these mighty difficulties would be easily removed. For all internal Medicines being to be considered as either they evacuate or alter, and there being no case so perplexed, that lies within the reach of humane power to remedy, but will afford us some signs whereby to direct us, not only when it is expedient to evacuate, but also when it is safe so to do, if we will but heedfully observe and seriously consider them : Neither can we reasonably be deceived in the use of Alteratives, because they ought not to be administered as Medicines directly to Cure a Disease, until such time as the Disease is known ; that is, that there is an appearance of such Symptoms as have been experienced regularly to be remedied by such a thing. For where
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there is no such, it may be much safer to act only negatively, by forbidding or not permitting the use of such things as may encrease it, then positively to enjoin that of whose Effects in that Case, we are as yet uncertain: For sometimes by an untimely endeavour to relieve Nature, we may only oppress her. And it is clear in many Cases our negative knowledge in what should not be done, is much more extensive than our affirmative in what should be done.

III. But notwithstanding, all particular Juices are only Separations from the Blood, and the Secretory Vessels are only passive in that performance, so that they cannot be depraved or altered, but as the Blood is some-ways corrupted or changed (excepting where the Organical parts are any ways injured by external violence or force) for if they are internally altered, it must be by the Fluids. Yet by reason the Depravation or Alteration of these Juices becomes in Slow and Chronick Diseases first visible to us, and such are denominated from them; I shall consider them under a third head, as distinct from those of the Blood and Spirits, and so appertaining to the appropriate Juices.

IV. But that we may the clearer comprehend these Diseases, it will be necessary briefly to repeat what hath been already proved, *viz.* That the Blood is a Fluid, compounded of very different and unlike parts, and that

it continually parts with some, and daily receives others. That those it parts with are usually separated from it, by the means of Vessels so constituted and fashioned, as to filtrate and let pass such Juices as are besitted to insinuate and run thorough them, so that they are only passive in the Separation; that therefore the internal Cause of the differing Alterations in these Juices, is from the nature or disposition of the Blood, from whence they are derived; and that when that is altered these must be so: But we can learn nothing immediately of any internal Alteration of the Blood; by reason that it is so included in its own, and other Vessels and Parts, as entirely to exclude us from any knowledge of it, but as we collect or conclude by its Motions or Separations, for it is they only that fall under our cognizance: So that they being observed to be altered, we infer, that, from whence these are separated, and upon which they depend, must be so; but what that is, or how directly effected, we can never learn, as not having faculties for such a discovery; in this only we are certain, that is changed because these are: And if this change is sudden or violent, it is usually attended with such Symptoms as are collectively expressed by the word Fever; but if slow, gentle and languid, it is then commonly denoted by some indefinite word, as Scurvy, ill habit of Body,

dy, foulness of Blood, or, if you please, a Cachexia ; so that as that state of Blood that is generally called a Fever, is to all acute, sudden or violent Diseases, so is Scurvy, ill habit, or foulness of the Blood to chronick or slow Diseases: With this difference, that acute Diseases, by reason of the suddenness or violence in seizure are commonly immediately observed, and denominated: Whereas Chronicks being gentle and slow in their beginnings, are not at first much regarded, until gradually encreasing they have formed some one or more formidable Symptoms, and then they are made a Disease, being honoured with a particular name; when in reality this now named Disease is nothing but some separation from an altered or vitiated Blood, made by the means of some Secretory Vessel, or else somewhat cast out or expelled the Blood, upon some consistent part, that is not by nature adapted to receive such Separations. But notwithstanding these Separations proceed from the Blood, yet it is evident, the Vessel or Part gives to them their form; that is, the qualities or powers from whence they are denominated, and by which they become such a particular thing to us, are derived from thence; which appears in that such Separations are cloathed with such qualities as are not to be found in the Blood; and furthermore, by reason if such are again but received,

ceived into the Blood, they corrupt, disorder or alter it. So that although such Separations are often changed as the Blood alters, yet that seems to proceed in that the Configuration of the Vessels or Parts may be someways injured or forced by reason the Fluid that now pervades them to pass, is altered, which seems the more probable by reason such being consistent, and having no Motion proper to them, cannot of themselves alter their figure or texture; if therefore by these Effects they seem to be so, it must be made by some other Body: And by this means we may sometimes observe they acquire such an internal Configuration as never afterwards to separate naturally, which appears in that the Juices afterwards there separated, are very different and unnatural, as I shall farther prove.

V. Every days experience will abundantly confirm this truth, that it is not in Nature necessary, that every substance that is drawn, separated, extracted or divided from another, was formally pre-existent in it, but that it was materially, carries its own Evidence; for instance, I suppose no Man will be so vain as to affirm, that the Feathers, Skin, Bill, Bones, Flesh, Heart, Liver, Blood, and all other parts of a Chick, were actually and formally pre-existent in that uniform Liquor, the White of an Egg, or, if you please, that and Yolk, out of which it is most certain they must

must be formed : Neither will any one be so hardy to averr, that the glorious Colours of a Tulip, the fragrant Odours of Jesmin, the delicious taste of a Pine Apple, were formally pre-existent in a little contemptible Earth and Water, yet it is plain, Nature out of these does daily produce them : I need not instance farther, there being such a numberless number of such productions that may fall under every one's observations : Neither need I enlarge by shewing farther, how a little humane skill can again multiply another number of properties or qualities out of these that were not to be observed in them. It is true in all these things there is required an Aptitude, Capacity or Disposition in the Materials, for a Chicken will not be formed out of every Egg, nor all Earths and Waters will not equally produce such rarities ; yet still they were not formally pre-existent in them, which is all I intend to prove. But although these instances must be allowed as most true, yet perhaps it may be objected, what is all this to what passes in our own Bodies, for notwithstanding it is thus with other Beings, it will not from thence follow it must be so in our selves. To obviate this objection I shall not insist how our Blood, Juices, and our consistent parts that are nourished and encreased by what we eat and drink, are extremely unlike such things ; but shall by a visible and common instance

instance shew that the part directly gives the Form, although the Blood supplies the Matter. In an Inflammation we may sensibly observe in the very part, that it gradually acquires new qualities, it being at first red, and if wounded then it distills Blood, which by lodging in the part, insensibly suppurates, and becomes what we call Corruption, Pus, Matter or Quitter. So that there it assumes new qualities that justly entitle it to new denominations. And this is likewise most apparent in most Tumours, Sores or Ulcers. And Tumours, from whence most usually the others proceed, being several of them, but slow and preternatural Separations, and often attempted internally to be remedied, may therefore not improperly be considered as Chronick Diseases, or at least as occasions of creating such; wherefore it may not here be alien briefly to consider them.

VI. Tumours or preternatural Swellings being some unusual Separations left, lodged or collected upon a particular part, may be considered, First, Either as such as are effected by the separating or exterminating of some Peccant, Morbifick or Offending Matter that had occasioned disorders in the Blood, which being now thus lodg'd upon a particular part, the Blood is delivered from it, and so recovers its natural state: So that this is always to the advantage of the Diseased.

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Or, Secondly, as such that although they are the effects of some Separations, yet the Blood is not bettered or mended by them, so that there is no sensible advantage by such.

Or, Thirdly, Into such as although produced by some internal cause, yet arising from such small and unperceived beginnings, they are not observed until formed; so that they do not discover how they spring; as whether the Blood freed it self of any disagreeable parts by first lodging them there, or whether from any Irregularities in nourishment, or some small depravity in the Blood, or from what other unknown Cause; for if, as sometimes they do, they proceed from any external violence, the Cause is manifest. However, the Tumour or Part being now forming, and continually receiving a new accession of Juices, it thereby naturally encreases, and this being slowly performed, the Blood moulds it self into Vessels, which it is always prone to do: And thus by slow and unheeded steps from small and unperceived beginnings, it fashions it self into preternatural Tumours, with Vessels adjoined to the Veins and Arteries, by which afterwards being supplied with new Matter, which it changes into strange and unusual Juices that do not seem to be formally pre-existent in the Blood, being so very unlike it in their properties. And thus having acquired
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such new qualities that are unnatural to us, they sometimes become painful and uneasy to the contiguous parts: And if these their strange Juices are by any ways returned or received again into the Blood, they act a new Tragedy there, by Corrupting, Altering or Poysoning of it, and thereby give an occasion for the birth of a great variety of strange and dangerous Symptoms, as may be particularly observed from such we call *Cancers*. For these unnatural Tumours or Vessels wanting for the most part their proper *ductus*, whereby to discharge their Juices out of the Body, must naturally either swell and enlarge, or the Juice they separate must be again gathered up, or received by the running Blood. If the former, these being contained in their proper Coats, must gradually encrease, and then will according to their several natures, be either easie or pained, hard or soft, equal or unequal, coloured or discoloured; and are according to their several Appearances, or the Juices or Substance they seem to contain, variously denominated. Thus some from the resemblance of their included Juice, are named *Meliceris*, *Atheroma's*, and some made up of a hard or firm substance, are according to its likeness called *Sarcorna's*, *Steatoma's*, or perhaps *Scirrhus*, and if painful, unequal, hard, perhaps *Cancers*. But if the Juices they make seem to be again received into the Blood, these then

then seldom arrive at any large bulk, but sometimes some of them rather contract and indurate in some odd and unusual manner; and by this an Iliad of mischiefs are created in several parts of the body. But by what name soever they are called or known is not much material to my purpose, since it is evident they are all included in their proper Membranes, and all enjoy their own Vessels, by which they receive their several Juices. And although they are not congenite and natural to us, yet being thus once formed they are a real part of us, and enjoy all the privileges of other parts in being continually supplied by the circulating Blood, in being annexed by their own Vessels, and so are no more internally to be destroyed, than those born with us. It is true sometimes some natural parts themselves become so altered or changed as to be transformed into these unnatural Tumours, Organs or Vessels, and then make strange and offensive Juices as we may often observe by some Glands situated about the Neck, Mouth or Breasts. But whatsoever such things were, or how produced, is not the end of my enquiry, for being once so, and having their proper Conduits by which they receive Matter for their Juices, they can no more be defrauded of it than any other part. In this indeed they are extremely different, in that being of an after date, they are so far from being service-
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able to the ends of Life that they are often destructive to it, for not being moulded with the rest of the Body, they neither exactly quadrate with the other parts, nor are their Juices friendly to others.

VII. And these Juices not being formally pre-existent in the blood, but prepared by the part, as I think is in a particular manner evident from that corrosive Matter that is often made by Cancers, as likewise from those strange and unusual Substances that may be sometimes found in other Tumours, which are very unlike any thing to be met with in any other part of the Body. And these Parts or Vessels preparing such Matter, being so situated as continually to receive new Matter for it, will of course make it ; and the quantity of it will be as the proportion wherewith it is supplied, if it is in no other way hindered. It is true, the nature of it may be farther changed, as the Blood is more or less depraved or corrupted. For what the Blood does in these, or in any other Separations, is only bringing the Materials to the Part, to be there some ways modified that it may assume new qualities : But if the Blood is corrupted or greatly altered, it may so alter or affect the preparing part that what is there afterwards made, may be more unnatural and offensive. Yet these Tumours or rather Vessels, are never to be remedied by any Methods to alter and sweeten

sweeten the Blood, by reason being once formed they do not depend upon any fault in that. For being now Vessels endued with common passages, whereby they are supplied from the common fountain, as all other parts are: And the Blood being perpetually impelled in its Circulation forward, can never by any internal remedy be hindered from flowing this way, where it finds no more resistance to its progression, than what is common to other parts, and therefore must equally run here, so that by whatsoever methods we endeavour to hinder or defraud these Vessels of their proportions of Juices from the Blood, we must by the same measures rob and defraud other parts; by reason the Blood being equally impelled forward, must pass in proportion this way, unless hindered by any local resistance. And although it must be allow'd there is a marvellous difference in these Tumours or Vessels and in their Juices, yet they agree in this, that having their proper Pipes by which they are fed, they are not internally to be destroyed; no more than those that are natural to us, and born with us. This I think shews the vanity, and experience the inefficacy of that Tribe of Medicines that are frequently used in these Cases, as things that correct stumous or cancerous humours, or as sweeteners as they are termed in such Cases of the

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Blood,

Blood, as Pearl, Coral, some preparations of Antimony, decoctions of *Sarsa, China*, and such like. For if the Juices, or, if you please; Humours, are made by the now formed Tumour, Part or Vessel, as I think it is evident they are, then are they not to be altered, unless that which makes them can be destroyed, which can never be done that way. But here I would not be misunderstood, as if I exploded the use of these things in all such Cases; which I do not, but only shew their insufficiency for contributing any thing directly towards the removing the Tumour, or altering its ordinary Separation; but if such things are accompanied with such a state of Blood as indicate or requires their use, I think they or any other proper remedy ought to be administered. For although no internal Medicine can by altering the Blood change the ordinary state of the Juices that are separated by these Vessels or Tumours; yet if they are become worser by some depravity of Blood, they may by mending that be again reduced to their former state: And not only so, but their encrease may be somewhat hindered by lessening that Matter by which they are supplied. For it is clear that these Tumours being supplied and fed by the Blood, as all the Secretory Vessels are, will partake of its alterations as they do: So that as whatsoever retards the Motions or unloosens the Mixture

ture of the Blood do usually enlarge other Separations, they will likewise perform the same by these; and on the contrary whatsoever lessens them, usually diminishes these, as we may frequently see in Fevers. From these things thus premised we may readily discern the reason why Mercurial remedies that so powerfully resolve Tumours that are luxuriantly formed, but not contained in a proper Cystis, nor endowed with particular Vessels, whereby they are fed, are so unsuccessfully given in these: And why the most powerful, and most lasting Evacuation, even Salivation, has no other effect than to waste these proportionably with other parts; and why in the worst of these that we term Cancerous, they are so very hurtful, and likewise why outward applications and especially such as are thought to discuss or suppurate are so very dangerous; for by the first of these the Blood will be the more tainted, the noxious Juices being by such applications drove from the part, and by the last these unnatural Vessels are the more irritated and enraged, as being by such disposed to be more susceptible of Juices.

VIII. Such then being the state of these Tumours, it is evident they are never to be destroyed but by an Extirpation, which by reason of their situations cannot always be securely done; neither if the Blood is already de-

praved or corrupted by the Poyson of these Juices, is it to any purpose to do it, for to extirpate such is only to create new mischiefs. And what remains to be done, seems to me principally to consist in a plain, simple and regular way of living (always excepting where such are attended with other indispositions.) For unless where Fashion, Usage or Custom hath introduced a manner of living that will necessarily encrease Separations, I see no reason to have recourse to Medicine. For I conceive that all the consistent parts are nourished by the Blood, and that these and all the natural secretory vessels separate their Juices from thence, and that the more is wasted and discharged, the more then is required for their supply: That what we call hunger and thirst, that is, the desire of eating and drinking naturally proceeds in that such a quantity of Juices are wasted or spent, that the solid parts cannot receive a due proportion; hence the tender and sensible Fibres situated in and about the Stomach, *Fauces* and Mouth, that are befitted and placed by the great Author of Nature to give the Mind notice of this Bodily want, begin for want of such Juices to corrugate and be uneasie, by which the Mind is alarmed by a perception of that, which is what we term hunger and thirst, and thereby a desire is created of eating or drinking,

ing, whereby to quiet this, by supplying what is wanting. For the Blood being contained in its proper Vessels, and always moving in them, seems as if it were naturally to be commensurate to them, so that as the Consumptions are, the supplies should be; and this Nature plainly dictates, in that such Persons who by virtue of labour, toil or bodily exercise, make the greatest Consumptions, usually acquire an Appetite answerable to such. And on the contrary they that waste little, usually eat little. It is true this admits of great Exceptions, some Persons eating plentifully that waste little by toil, but then it is when it runs off again by some other ways, as usually in Loosenesses, Sweats, or so forth. They therefore that indulge themselves to ingest plentifully, and do not sufficiently waste what is superfluous by Bodily Exercises, the Blood being encreased and the Vessels loaded, the Secretory Vessels not being able to waste it fast enough, either from its quantity, or its inaptitude to pass by them, it can be no wonder if these unnatural Separations do from that reason encrease. However, these will receive their proportion, and the more the Blood abounds, the more these must be replenished; or the more that is depraved, the more these must alter; so that here there is a necessity of

frequent Evacuation ; whereas had there been no redundancy of these Juices, there had been no cause of it. But the so adjusting our manner of living, as not to create such superfluous Juices as seem to require frequent Evacuations, being by reason of the Custom, Fashion or Mode of the present Age so great a difficulty as not to be attempted without censure, or practised without reproach : Repeated Evacuations in these Cases will be necessary, not that they exterminate these unnatural and offending Juices, but that they lessen that Matter out of which they may be prepared.

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SECT. III. CHAP. II.

IF we but impartially examine the state of Blood, from whence Chronick Diseases that consist in preternatural Separations, seem usually to be derived, we may in the general observe it to be slow in its progressive Motion, and loose in its Mixture. The first of these appears manifestly by the Pulse, which if tolerably strong is always slow, or if quick it is languid and weak. And the Blood being continued in its Circulation, by the Vibration of the Heart and Vessels, its Motion must be as they are : But there are two things to be considered, in order to regulate our Judgment about this Motion, and these are the force and strength of the Vibrations, and the space or time between them ; for instance, should we admit that the Heart in a strong Systole should throw out two ounces of Blood, and in a weak one, but two drams, and yet the space of time between these two to be equal ; it is plain the difference in the Circulation by reason of these so different *impetus*, would be as eight to one,

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that is, in equal proportion to the *impetus* ; but if two of the weak Syftoles should be performed in the same time as but one of the strong it would be but as four to one ; for this Motion of the Blood depending upon these, must bear proportion as these do. The second is, that the Crasis or Mixture of the Blood is generally loose, and this seems to be a concomitant effect to the former ; for when ever the Blood moves forward but slowly, that is, is impelled but faintly, its Mixture becomes loose, its parts being apt to break, divide, disunite or coagulate running into parts, very differently, according to the capacity or aptitude of the Vessels, or hindrances it meets with, or some other unknown cause ; for which reason in most of these Diseases it plentifully wafts by depraved Separations, for although perhaps some one may be lessened or perhaps hindred, yet collectively taken, they are usually encreased. Unless in such Cases where its Mixture is so marvellous loose, that the thinner parts disceeding from the other, insinuate and get out of the common pathes and passages, so that they are not circulated with the rest of the Blood, but do then continually subside and fall downward, hence so great a quantity parting from it by this means, some of the Secretory Vessels must be deprived of it, by reason of this mighty deprivation, so that it is no wonder if they are

are lessened, notwithstanding the disposition of the Blood to part ; for these parts thus getting out of the road, cannot be drove about by the circulation, nor of consequence be brought up to the Secretory Vessels to be there secerned, as they would have been had there not been this maryellous discession.

II. It may be farther observed in some Chronick Diseases, that some one or more of the natural Separations may be lessened or suppressed, and yet not proceed from the cause already assigned ; but from some obstruction or hindrance, either in the Secretory Vessel it self, or in the *ductus* or passages from it. Yet notwithstanding any such default in any particular Separation, there always does, so far as ever I could observe in all Chronick Diseases, appear a marvellous readiness and disposition to separate, although sometimes in very unusual and unnatural ways.

III. But the better to confirm the truth of these things, thus only in the general here premised , I shall endeavour to illustrate them by briefly treating of four, that as they are esteemed the most formidable, so I think they are the most common of Chronick Diseases, *viz.* the Jaundice, Gout, Dropsie and Consumption, perhaps it may be objected that the second properly consisting in Fits, ought not to have been
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in that number ; but since the habit or disposition is looked upon as the Disease ; and I not being so solicitous about words, shall not depart from that form of Expression.

IV. When there appears an universal yellowness upon the surface of the Body, Urine, of a Flavid muddy red, or deep yellow, and Stools of a whitish or clayish colour, and these accompanied with internal disorders, which not being always regular nor the same, I shall not particularly enumerate them, but only in the general, that the most usual seem to be some uneasiness in the right Hypochondria, with a roaring and noise in the Bowels, Faintness and loss of Appetite, and such like. And these Symptoms thus co-existing, we combine by expressing them by one single word, and so make them a particular Disease, which is what we call an *Icterus*, or, in *English*, a Jaundice. And these unnatural Alterations being thus observed, do most evidently prove some internal cause from whence they must be derived ; and Dissections having discovered where such Symptoms have thus co-existed, the Liver or some of its appendant Vessels or Ductus's, have been someway affected, whereby the appropriate Juice that should be there separated, meets with some hindrance there, or in its passage or descent ; so that from thence we conclude that such unnatural

tural Symptoms or Appearances must proceed from that. But that I may the better unfold the nature of these things, it will be expedient to premise somewhat of this Juice, that is supposed to be the cause of this Disease.

V. That so well known Part, the Liver, is nothing but an Aggregate of minute Glands, which are so curiously fashioned, and so delicately contrived, as naturally to separate, divide or let pass thorough their Pores or Passages, such Parts or Particles that constitute that appropriate Juice we call *Bile*, which should descend by its proper *ductus* into the Bowels, which as to its sensible qualities is to the Taste bitter, to the Sight a deep yellow, to the Touch smooth, and affects the Nose with somewhat of a peculiar and inexpressible Smell. And this Juice although fecerned out of the Blood, and therefore materially pre-existent there, yet is not to be discovered formally in it before this Separation: Neither are we able with all our Skill or Cunning to separate, divide or extract this Juice by any art or method from the rest of the Mass; so inimitable is Nature in her workings, and so much she excels us in her most ordinary performances. And it seems farther reasonable that these qualities that make it Bile were acquired by the Separation; by reason when this Juice is but hindred in its usual and natural descent

fcnt into the Intestines, so that it regurgitates, is gathered up, or some ways received into the Blood in an unnatural way, it then only produces these strange and enormous Symptoms: For if it flows without hindrance by its natural passage into the Bowels it then occasions no such Effects: Although by that its natural course it must be blended and mingled with the Alimentary Juices; yet it is so far then from being hurtful or useless, that it is absolutely necessary, as must be concluded from the inconveniences and disturbances that plainly arise from the want of it there. For then only it tinges the Skin, discolours the Water; and it is from the want of it in the Bowels, that the excrements are not coloured; from the same reason the Stomach is spoiled, and in short, the whole Oeconomy of Nature altered: So much the Health, and even Life of an Animal depends upon these particular Separations, that they cannot be long continued without them. For when but this single one is hindred, how presently do we experience all our Juices become depraved, our Motions weakened, our strength impaired, and in short, our whole Body is altered. And on the contrary when this Juice is again naturally separated, and flows without hindrance by its proper passage how all these re-alter, and the Body, with all its contents, returns to its natural and healthful state.

VI. Taking it then for granted that these Symptoms that constitute the Jaundice are caused by some hindrance of the Bile in its natural and ordinary course ; it is plain it must then be remedied by removing that hindrance, that it may again separate and flow by its proper Channel. And since this hindrance, stop or obstruction, must be either in the Secretory Vessels themselves, or in the passages from them ; and this is not to be removed but by some force, and that must be either external, by the means of the neighbouring and adjoining parts, or internal by the Juices that there pass. For the Liver like all other Secretory Vessels, hath naturally no Motion of its own, so that when it is moved, it is from the contiguous parts ; and a due consideration of these parts evidently shew, by what ways only it is to be done. In order then to remove this cause (for I pretend not to determine its nature) recourse must be had to one or both of these things : Either to excite and stimulate the contiguous or adjoining parts into Motion whereby these may be affected by it ; or some ways so to alter the Juices that there should pass, that they may dissolve, bear down or remove what before hindered their descent. The first of these is most powerfully performed by the Stomach and Intestines, and therefore is to be attempted by Emetic and Cathartic Medicines, which experi-

experience teaches us, confine not their Operations to what is only contained in the Stomach or Bowels, but extend their effects to the neighbouring parts, for in the working of Vomits we may particularly observe, that this very Bile it self, after repeated discharges that way, comes then manifestly to be thrown up, as may be inferred from the taste and colour that is proper to it. And although we cannot be equally assured that it is so brought away in our Stools by Purgers, by reason we have not here the suffrage of our taste, yet I think we may conclude from the yellow Tincture observed in them, that it is so, by reason that seems to be peculiar to it, our stools never being so tinged when this is obstructed. By these observations we may conclude that the Stomach and Bowels being put into preternatural Motions, do really by that emulge this very Juice out of its own Vessels; so that by this violence or force from the adjoining parts, such let, stop or hindrance may be moved, and that it is so, experience abundantly evinces. Thus far I think we are incumbred with little difficulty; but as to the second way, *viz.* by the Juices that pass there, we shall be involved in more uncertainty. In this I think we may be certain, that whatsoever change or alteration we make in this Bile, it must be by the means and interposition of the Blood,
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by reason it is separated from thence, and Nature having formed no other passage by which Medicine can pass into it, but by that.

VII. But in order to clear these things as far as we are able, we ought to consider that this Bile does not appear to be preexistent in the Blood, by reason being continually separated and made, it must be supplied out of what we eat and drink, and I suppose few will be so hardy to affirm, that it was in them, for if they should, being a fact, they would be somewhat puzzled in the proof, the qualities that go to constitute it being so extremely different from any thing we ordinarily take. And likewise that all Medicines that exert their Virtues in the Blood, must do it one of these ways, either by altering some property, power or quality already in it: Or by helping, altering or encreasing the separations from it. The first of these in the present case can be of little use, for it is the hindered Bile that makes this Disease; so that the Blood is now altered or vitiated by that, and therefore is not to be cured until that hindrance be removed, that the Juice may again flow by its proper course: So that to intend first the altering the Blood, is going backwards, by reason the Blood will not be mended until the obstruction is removed. So that to proceed rationally we must apply our selves to the

the removing this hindrance, which is now the cause, which if performed this way, that is, by the Juices that should pass here, it must be by helping the Separations; that, what goes this way may unloosen, beat down or remove what here stops. From whence it will follow the feasibility of curing this Disease entirely depends upon the nature of the cause, that is, in the nature, disposition or situation of that Matter that occasions this hindrance: For if that is such as cannot be unloosened, altered or overcome, or some way forced away, the Disease can never be cured, for instance, if the Secretory Vessels are changed, or *ductus* grown up, or any firm or solid substance become too big to pass, or such like; here, I say, no Art can cure this: But if it is derived from what will give place by altering or encreasing this Juice, then the cause being removed the Disease will soon be cured.

VIII. And if we take a survey of such Medicines that seem formerly to have been administered for this purpose, either they are such as were generally esteemed Openers and so were promiscuously used in all Diseases that were thought to proceed from obstructions: Or else they were such as were thought in some peculiar manner to be proper in this, and most of these are such as bear some analogy or likeness in some one or more of their qualities to this particu-

particular Juice. And it is to this we owe the use of Saffron, Turmeric, Berberry bark, Selandine roots, and all that tribe that stain with a yellow colour: As likewise of Horehound, Centaury, Gentian roots, and such things of a bitter taste. Whether these are endowed with any real and particular Virtue, to help or alter this separation, I dare not determine; this only I can averr by my own experience, (and I have to the best of my Skill impartially observed them) I never could really find any. It is certain that young people, and sometimes others, have occasionally had their Skins dyed or stained with a slight and superficial yellowness; and likewise it is certain that this will sometimes succeed Gripings or Pains about the Hypochondria, whereby some are induced from that colour immediately to call it the Jaundice. And it is likewise certain in this yellowness, that most have recourse to these ordinary and well known Medicines, which Symptom commonly in a short time disappearing, the Cure of what they thus call the Jaundice is attributed to the sovereign Effect of the Medicine, and it becomes applauded as infallible in that Disease: When in truth the Medicine had the least share in it, or at least nature would have performed it without such help: For, I have often observed it gradually to vanish without any such assistance. For this does not seem to

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proceed from any settled hindrance in the natural course of the Bile, but from a short and temporary one, which it is probable by reason it so often follows Pain, may be occasioned by some nervous Constriction upon the passages, which being but of a short continuance, for the hurry from the Pain being sedated, all things do gradually return to their former state. It is true sometimes an unusual yellowness arises, where the Bile does not appear either by the Stools or Urine to be affected, but this only proceeding from an ill dyscrasie of Blood, and not from any hindrance in this Juice, is only to be remedied by invigorating that which is not here our Enquiry.

IX. It is, I must acknowledge, to me a question, whether Art, Chance or Skill hath as yet discovered any one Medicine, Receipt or Preparation, that doth only and particularly affect this Separation. For most of such as have formerly, or do now bear the highest Characters, and have been in greatest use, are such as alter and enlarge other Separations equally with this: I shall only instance in *Castile* or *Venice* Soap, and Acidulous Waters, which, not to mention what they perform in the Bowels, do, it's evident, marvellously affect the Urine; so that in their regular Operations they seem to do no more than dispose the Blood to Separations, and so amongst others to these. How-
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ever it is not improbable this Separation may be encreased or altered, by reason it is not always equal; although the direct manner of doing of it may be as yet undiscovered. Nay it is most apparent it may be altered in that it is sometimes internally obstructed, which could not be but that some unlike or incongruous parts must pass, which being there parted and left, do some ways stop or alter the Vessels, or form some preternatural substance, which becomes a hindrance to the free passage of this natural Juice: For it is evident whatsoever Substance or Matter that internally occasions this hindrance, must have been derived from the Blood, notwithstanding it gave no disorder to that, until passing this way it caused this hindrance to the course of the Bile; and then the Blood being vitiated from this cause is not to be bettered but by the removal of it.

X. However, those Symptoms that having been taken to appertain to what hath been commonly termed a Jaundice, being sometimes associated with others, that are very differing from what are usually in that Disease; Physicians have been obliged to investigate new Methods that might be better suited to such cases; thus when the Blood hath boiled with a Fever, and the consistent parts have been melted with heat; the Skin perhaps being stained with a yellow,

and the Water of a dirty red, the Disease hath been called a Jaundice, and so the Medicines that have been successfully used in these Cases, have been called *Anti-Ictricks*, and it is this it is probable that hath recommended Oleaginous feeds in Emulsions, Decoctions, or in Milk. And with the same reason the Cortex may be justly numbred amongst them, since that effectually cures the yellowness, where such Heats have Intermissions; whereason the contrary were the Blood cool, its Motions languid, its Crasis loose, although accompanied with a Skin stained with a flavid Tincture, such Medicines would be so far from curing it, that they would encrease it; and on the contrary Steel Aromatics, bitter Wines, Exercises, and such things will be the only effectual *Anti-Ictericks*. But when such Symptoms that constitute a Jaundice appear without much preceding Indisposition, but are afterwards accompanied with such which therefore seem to depend upon them, and so to be occasioned by this hindrance of the Bile: Although such are but the immediate effects of an altered or vitiated Blood, and seem to resemble those that we have formerly experienced to have been cured by chalybeate and invigorating Medicines; yet these in this case will be ineffectual, until the cause of the hindrance from whence these were derived, is first removed.

In short, the sum of all this is, that where there is an unnatural and continued hindrance, in the ordinary course of the Bile, there can be no remedy for those Symptoms that collectively taken, constitute the Jaundice, unless that can be removed : Which must be performed either by Evacuations made by the Stomach and Bowels, which in their Operations do emulge this Juice out of its proper Vessels : Or by some way altering or encreasing the Separation this way, that so the Juices that then pass may do it. And that these will succeed, according to the nature or situation of the cause. But that every observed yellowness, although perhaps called the Jaundice, does not proceed from such Cause, nor doth not require the same method, nor of consequence the success will not always be the same.

SECT. II. CHAP. III.

ALthough most of the Diseases that we call Chronick, that now prevail in this our *Britain*, seem in some measure to be the Off-spring of a luxurious or too sedentary and unactive a life, excepting such as succeed to acute Diseases, or such as being local, evidence themselves to be otherwise, in that most persons that inhabit those unhealthy places become incident to them, and the very removing out of these insalubrious regions is usually found a remedy to such as are contracted there, as may be frequently seen by such who have the misfortunes to inhabit in the unwholsome Marshes of *Kent*, *Essex*, and such fenny places. Yet I think no one in all the tribe of Chronicks gives brighter proofs that it is derived from thence than the Gout; which by reason of the habitual disposition to fall into what we call Fits of it, I have rank'd under this head, notwithstanding the pains are so severe. But that I may not lay a stumbling block, or give offence or occasion of censure to some who are tormented with this

this Disease, and yet lead a very sober, temperate and orderly life, I shall beg leave to explain what I intend by the word *Luxury* (although I do not assign that the only cause ;) I do not understand by it only such a disorderly course of living, wherein men dedicate their lives to pleasure, which Fashion, Custom, State or Use hath so far endeared as brings them to think that it can only consist in tickling their Palates or warming their Heads : No, I take it in contradiction only to what nature as yet uncorrupted with such false glosses, pressingly requires for the relief of our wants, such as are support and nourishment ; and even in those not always for an excess in quantity, but for a wanton, though customary use of such things that seem not to be properly fitted for such ends.

II. Such being the natural state of Man, as that his Body is under a constant Vicissitude and Change of parts, continually wasting, losing, or some ways discharging some, and of consequence therefore in order to continue its being daily requiring a fresh supply of new ones to repair what is thus wasted, and to recruit what is thus wanting. But if he will take that for Aliment that doth not seem to be befitted for it, and in quantities too large to be useful, and yet take no care to discharge it ; yet can be no wonder if what he thus takes for his

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pleasure

pleasure, becomes the cause of his punishment, since our Bodies are in measure and our wants within bounds.

III. It is true infinite Wisdom not seeing it fit to commit the Dominion and Sovereignty of our lives to our selves, and our fleeting condition requiring a continued supply of Aliments, hath mercifully engrafted in our minds a perception of pleasure in the taking and receiving of them : And likewise as a Monitor of this necessary want, hath so constituted us as to be affected with an uneasiness, which is hugging and thirsting, by which the Mind is admonished what the Body wants : And likewise as a reward for complying with these admonitions, does give a pleasure in the satisfying of them. And having, as I think, naturally proportioned our appetites to our wants and our desires to such things as are simple and wholesome ; naturally, I say, for what Man, as a free Agent may by use bring upon himself, seems to me to be of another consideration ; for we may observe that men by use may be reconciled to excess ; and things that are at first ungrateful, and even offensive, may become pleasant. For did we but as carefully observe what nature, our best guide, directs, as perhaps the wretched and uncivilized *Indians*, that we call barbarous ; or as all Animals that are not under our Confinement and Government do, we might as well

well be exempt from that Iliad of Diseases, that we are now punished with, as they for the most part are; I intend Chronicks, not acute Diseases. For although infinite Goodness hath so fashioned us that eating and drinking is a pleasure, and although he hath enriched this Globe with a variety of beings, which being taken by us, must differently affect our Palates, whereby the Mind must have perceptions of differing tastes, which must be more and less grateful, and thereby give different degrees of pleasure. And although the Mind will naturally lean to what is pleasant, yet that seems to carry it no farther than to the satisfying that want that created it, and what goes beyond this is what is acquired. For, having created us free and intelligent Beings, although he hath not directly put it in our power to alter our Organs of Sense; yet we can by an habitual and repeated use so change our perceptions from them, that what was at first loathsome, will be pleasant, as may be instanced in several things that had nothing at first to recommend them to our liking, but fashion or custom; to which notwithstanding by a continued use we become marvellously endeared; and such farther is the nature of our Bodies, that Habits in such things, as even in excesses, are hardly to be discontinued without some prejudice.

IV. But how this is, or by what steps acquired, is not much material to my purpose, since it is most certain there are but few of the Masculine Gender even of the most abstemious, such now is become the manner of living amongst those whose Births, Qualities or Fortunes will permit, but a due consideration had to the nature of their Meats and Drinks, the manner and method of taking them, the little exercise or bodily motion they use for the Consumption of them, but must receive more than what can be applied for repairs and nourishment: And whatsoever is admitted into the Blood that cannot be converted to such uses; nor cannot, by reason of the quantity of it, or by some unfitness in its qualities, be timely separated and discharged by the Secretory Vessels, or Natural Passages, must naturally by too long a stay there create disorders, which if they do not break out in any sudden and violent Disease, must gradually form some slow ones, which are usually denominated from the part they affect.

V. If therefore in our eating we prefer our pleasure before our hunger, and if in drinking, the warming our heads before the gratifying our thirst, by which means we daily ingest such things that cannot be appropriated for natural uses, nor cannot readily pass away by the Strainories, neither do we consume them by bodily exercise; it is no wonder

wonder if they leave some relicts that become the seeds of infirmities. I would not be misunderstood, I write not this to reproach or reprove mankind; but to shew the true cause of the Disease I am now treating, for I am a Man, and as incident to these frailties as another. But since Diseases must proceed from these beginnings, and since these methods of living are not without censure or danger to be altered; there can be nothing to prevent the ills that must flow from them, but by some early discharging what is thus superfluously ingested. But since what is once thoroughly mingled with the Blood, cannot be evacuated until separated, nor separated but by the Secretory Vessels; and they do not, or cannot separate it; the mischiefs that arise from these things must be unalterable, and especially when this is not the effect of one single act, but of a continued course of living. Unless by continued exercises or bodily motions, the parts of the Blood are so agitated, and the Crasis preserved, and such intervals of time allowed, that what is incongruous or superfluous to the Blood may be spent, before fresh is admitted, so that it may not by being often loaded, forced into unnatural Separations.

VI. The truth of this appears in no one Disease so conspicuous as in that we call the Gout, for if we circumspectly trace it
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to its true cause, by considering the Persons it affects, their manner of living, we shall evidently discover it to be the Off-spring of a Luxurious (I ask pardon for the expression as wanting a fitter word) and too unactive a life, for whatever pains have been taken to deduce this Disease, from this or that particular Liquor, there can be no fuller proofs against the unsatisfactoriness of such Arguments, than to shew by Fact, that it promiscuously effects such that use very different and even contrary ones.

VII. It hath been an opinion advanced by some, that the Gout is the proper Offspring of *French* and *Rhenish*, or thin and raking Wines. It is most certain that such Wines do, or if you please, that Claret brings the Gout, but then the conclusion is too severe when they say it only does so. For if we do not too much narrow our observations in favour of our own opinions, we may plainly see the cause of this Disease is not contained in the only use of these Wines, nor of thin or raking Liquors: Notwithstanding that such Persons that indulge themselves to the liberal use of them, are frequently afflicted with it. For the Gout appears to have been a Disease well known here in *England*, long before the so general use of these Wines, by reason we find it mention'd in the Writings of divers eminent Men.

Men. And methinks the very word seems to confirm it, for it is very remarkable, we have few native words whereby we can at once express a Disease, most of them now in use are either *Greek* or *Latin*, or derivatives from such. This alone, if we had no other proof would be an argument that it was known here before the so fashionable use of these Wines, which, I think, never came to be so universally drank, until after the return of King *Charles*, who, by reason of a tedious Exile, became enamoured with the Liquors and Customs of those Countries where he lived, and upon his return, *Regis ad Exemplum*, the fashion spread. For unless there had been such a Disease, Men could have no occasion for such a word, the end of Language being to communicate and record our thoughts. But the true reason why such persons that ordinarily drink these Wines, are so often racked with this Disease, seems to me to consist in this, that those who by Birth, Quality or Fortune are placed above the common rank of Men, will in every thing endeavour to distinguish themselves from the meaner sort; as may be observed by their Houses, Clothes, Tables, Attendance, Manners, Fashions and Liquors, and in short, in the whole course of their living, and the encrease of Trade having encreased our Wealth, and the importation of Foreign Liquors. And these
Wines

Wines being the Prince's Liquor, and passing comparatively quick, as being thin, soon likewise become so to most whose Qualities or Fortunes would permit of the expence; and such usually by Choice or Use, or for State or Fashion, usually indulging themselves in easie and unactive pleasures, do often as an Effect, or rather Punishment of such a course of living undergo the punishment of a tormenting Gout. But it is clear it doth not proceed from the only use of these Wines, since others who rarely drink of them, but liberally indulge the use of strong Liquors; and equally please themselves with sloth and ease, are at certain times as severely handled with it. And thus hath it been formerly known in Countries where these Wines were never used.

VIII. But notwithstanding it is not improbable that the constant use of these Wines may sooner dispose Men to this Disease, than our native Malt Liquors, supposing the way of living to be the same; by reason this, if drank young, is much more prone to work off by Loosnesses: Whereas these Wines rarely pass that way, but by Urine or Sweat, which not always equally succeeding, nor spent by Bodily Exercise, it can be no wonder if they are afterwards separated, lodged or deposited upon a Joint; and if Malt Liquors are kept to such an Age that they only pass the same way, they equally produce

produce the same Disease: And especially when perspiration by reason of the Alteration of the Air is hindred: For, I think, we may observe here in *England*, that certain and periodical Fits of the Gout rarely begin in the hot Seasons, for the Summers heat usually unloosens the Joints of Gouty Persons, from the manacles of that tormenting Disease; and if by accident they fall into a Fit in a warm season, it is usually then occasioned by some immediate act of intemperancy, and is seldom lasting as in the Winter Months.

IX. These reasons drawn from common observations of the Disease it self, the time of its affecting, and the persons affected, are motives to me to think that the common and proverbial saying of *French Wine* or *Claret* bringing the Gout, is unjustly grounded, and that this Disease is not the product of that peculiar Liquor: But that strong Liquors not being befitted for the natural and ordinary uses of our Bodies, being often ingested in such proportions that all their parts cannot be spent by the Secretory Vessels, nor not being by bodily motion continually evaporated, nor hindred, being gradually congested from being unnaturally separated and lodged, must necessarily form this or some other Disease. For if the Blood deposits what is thus gradually become offensive and peccant upon a Joint, it is then
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called the Gout, but if thrown upon another part, it then obtains another denomination. And that this is so appears evident, in that few Persons are ever tormented with this Disease, notwithstanding they daily and plentifully ingurgitate strong Liquors that do not indulge themselves to ease, but continually apply themselves to such bodily exercises, that such may be steamed out or evaporated by transpiration before more is ingested; or at least that the Blood may be exagitated by such, that it may not fall into unnatural separations, but that such matter may by some otherway be exterminated. But here I would not be misunderstood, as if I suggested that bodily motion would always protect an intemperate Man, that already hath had Fits of the Gout, from any future ones: Which I do not, for it is plain whatever part in a humane Body is become relaxed or weakned by being often affected by a Disease, it will always remain very susceptible of peccant Juices, and slight disorders will readily pass that way, the parts being prepared to receive such. Yet this I think I may suggest, no one expedient will go farther for the spending what is superfluous and incongruous from such Liquors, than this, and so of consequence will go farther for the preventing it. And what particularly confirms me in this opinion is, that I never as yet knew any one
Person

Person, that whether by necessity or choice, that had continually accustomed himself to daily labours or exercises, that ever was excruciated with it; for what gives birth to this Disease, consisting, as it's probable, and as I shall farther shew, in somewhat that is superfluous or incongruous, that will not be so readily extirpated by any other passages, as by the pores of the skin ; if it is not therefore forced off that way, it will by being encreased, be deposited in some other part, and the legs and feet not being so much used as to hinder its settlement, often become the receptacles of it, and the Joints more especially, as having room for its reception. And it seems to be from this reason, that persons of plentiful Fortunes pleasing themselves with ease, their limbs being brought by an over tender Education, and for want of use, to be too weak and unfit to undergo bodily toils, become most incident to it, by thus frequently drinking these Liquors, and not sufficiently spending them this way ; hence it has been called the Rich Gout ; or, the Gentleman's Disease ; it oftener, for reasons already recited, residing in Palaces than Cottages.

X. But the better to illustrate what hath been already said, I shall here take a short view of this Disease. The *English* word Gout is used to signify a pain or some affection of the Joints, and is taken to answer

swer to the *Greek Arthritis* : And seems to differ from what we call *Rheumatismus*, which likewise often affects the Joints, in that it is commonly more permanent, and fixed to the part where it first seizes ; for although it is not always bound up to one only part, but will sometimes scatter and remove ; yet it never so nimbly moves, nor so promiscuously roves from Joint to Joint as that ; neither is it accompanied with such violent heat, or sudden pain. It usually, I say not always, begins in the Joint of the great Toe, as perhaps being remotest, or some part of the Feet with Pain, which is often attended or succeeded by Tumour and Weakness. And the grieved Part, as the Fit declines, or the Symptoms vanish, will ordinarily throw out a sort of branny Scurf ; and sometimes when it hath often repeated upon the same Part, there will be formed a Chalky Substance ; by all which and the great advantages in other things that accrue to the Person that hath been excruciated with such a Fit ; it is evident that there was somewhat Peccant or Offending, that was separated, deposited or lodged there ; which if it had not been exterminated there, would have given disturbance, or created mischief in some other parts.

XI. I think it not much material to my present purpose more particularly to enquire why the Joints should be more frequently affected than other parts in Men leading these sorts of life: Altho perhaps the disproportion in the numbers between such as are affected in the Joints, and such as suffer in other Parts, and so are made Diseases called by different names; is not so great as may at first sight be imagined, as I think will appear to any one who will but seriously reflect upon what he may observe; for what a multitude of Names, and so of course a multitude of Diseases have we, from unnatural Separations made upon other parts; which being denominated commonly from the parts affected, are looked upon as distinct Diseases. Now there being in a humane body so many Joints, in comparison to other Parts, of which perhaps there is but One, and an affection of either of these being often called the Gout; it is no wonder the disproportion may appear great between that and any one particular Disease, since the word Gout is used to signify so many parts affected, as being all comprehended under the word Joints; whereas most of the other denote only One. This Disease then we call the Gout, being a separation of Peccant Matter congested by the Blood, and now expelled from thence, and lodged upon the Joints; by which means other parts subservient to nobler uses are de-

livered from the danger of it; For had that very Matter, as being Incongruous and Peccant, been deposited upon any of those parts, whose Motions contribute to life, it might have endangered that, so that congratulatory Compliment of long life to such as are under this torment, seems in some measure to be grounded upon reason, because when this Disease is actually formed, life is not then in danger from such offending Matter, as being fixed in the Joints. And when by repeated Fits the Blood hath took a course of Purging it self this way, other more noble parts are not in equal danger, for these being now relaxed and weakned, readily become the receivers of it, as often as by irregularities it is congested. It is true such Gouty Persons (and perhaps usually by their own faults) are not always exempted from Separations, which make disorders sometimes in other parts, as in the Head, Breast, Stomach, and where not, and then according to the modern phrase, such are termed the Gout in such parts, by which expression in the nature of things, no more can be intended than that the Peccant Matter that used to be separated upon the Joints, is now thrown another way; wherein perhaps there may be more danger; from whence it will follow that this Separation upon the Joints we call the Gout is to the safety of the Diseased.

XII. If therefore Men would but impartially consider what they mean by this word Gout, and what they really propose when they talk of curing of it, they might plainly discern it is impracticable, and therefore a vanity to promise to perform it by Medicine, since the Disease only proceeds from our manner of living; and then if so, only to be prevented by that: For the Effect of Medicine can reach no farther than to evacuate or alter what already is: For of what is not, there can be no affecting; and here fresh causes are daily administred, which therefore if not daily spent, must gradually produce it.

XIII. But that I may not confound myself in the use of the word, this Disease may be considered as a Fit, and so properly the Gout, or as only a habit or disposition to a Fit. But if as the first, and by the Symptoms it appears that the Peccant Matter is perfectly separated by being lodged upon the part affected, it is plain it then requires no internal help, nature having well performed that. But if there appears but an imperfect separation, so that nature seems to require assistance, and this being to be done by the Blood, for it is that that is to be assisted in the separation; it is clear we must be governed, as we can be directed by that, which is only by its Motions or visible Separations, as in all other Cases. But it being common in these

Fits, that many Persons being impatient of Pain, or weary of Confinement, have recourse to outward applications ; for which reason I shall briefly consider them, and the advantages or disadvantages that can arise by their use, and that under these three heads.

First, Either as such as repel and drive back the separated and morbid Matter from the part where it is lodged.

Or, Secondly, As such as are thought to waft and evaporate it from thence.

Or, Thirdly, As such as seem principally to allwage and sedate the Pain.

As to the first of these it appears *prima facie*, unsafe and dangerous, for this separation being to the advantage of the Diseased to repel or drive it back, is unnatural and may be fatal, and in no one case ever to be practised.

As to the second it looks at first sight somewhat reasonable, but if we but seriously attend to what nature in this case does, we may easily conclude, it can only be specious, and indeed trifling : For the Peccant Matter here lodged, is as yet unfit to evaporate or perspire, and therefore lodges ; which appears very clear in that not suppurating, and so not discharged by any particular Orifice, it does, when it is fit, pass the Pores of the Skin, which the branny scurf that arises upon the diseased part, upon the recession

sion of the Fit plainly evinces. If therefore nature does spend this Matter that way, and if the reason why she doth not do it sooner is the unfitness of it, as yet to pass. And that this is the reason is evident in that the grieved part being kept warm, there is no outward hindrance to its passage; and in that some parts of it will not sometimes go that way, but will there mould themselves into a Knotty, or perhaps Chalky Substance: Why then it can be to little purpose to stimulate the part by outward application, to emit that which cannot, or is not, befitted to go. And besides, it may be unsafe by reason by disturbing the part with such applications the peccant Matter may be removed from the part it was safely settled in.

As to the Third, It is certain so long as we are in possession of Divine Opium, we have a Weapon whereby to blunt the sharpest Pains; but then the question is, whether in this case we ought to use it? To me I think, if we prefer future safety before present ease, which I think we ought to do, where there is no imminent danger, we ought not. For Opium, as I have formerly shewed, alleviates the Pain, by only quieting the Spirits; so that by that means the Spirits not being affected, the Mind has no perception of it, but it does not in the least waste that separated or fixed Matter that caused it, in which only consists the Cure, with any safe-

ty to the Diseased. Besides, although Opium does not hinder Separations in the general made from the Blood, yet it often accidentally does particular ones; for a separation once made upon a particular part may be continued or encreased by the Motions of the Fibres of the part, which Motion Opium will quiet; And hence sometimes a farther continuance of that separation may cease, which otherwise by this Motion which causes Pain, would have been encreased, so that Opium in imperfect Separations attended with Pain, may be extreamly dangerous by reason the Peccant Matter which is there fixing, is continually invited by Pain to flow that way, whereas this being by that thus stupified, it is not enticed thither. In short, Opium in the Gout may give present Ease to the Diseased, and Reputation to the Adviser, but can never spend the Matter, in which alone the true Cure and Safety of the Patient consists. For these reasons, I think, all Fomentations, Plaisters, Oils, or Unguents, or any outward Applications whatsoever, ought, as things pernicious, in the beginning of a Fit, to be expressly forbidden, and in the latter end rarely if ever to be advised.

XIV. But if the Cure of it is proposed as a state or habit, by which must be intended a disposition or capacity of Blood at sometimes to separate or depomite peccant Matter upon the Joints. Why then it may be considered

dered that such Matter could not be so, *de novo* made, but that the Blood is supplied with materials for it, which must proceed, as I have observed, from our manner of living; and then it will follow that the preventing Fits of this Disease must absolutely depend upon one of these two things, either in the not administering Matter fit for it, or if such, by reason of our way of living is administered, the continual spending of it, that it may not be so congested as to come to form a Fit. For, as to what may be pretended to be done, in order to alter that present ill Temper, State or Habit of Blood, from which may be insinuated future ills may arise, will, I think, if truly weigh'd, be found only specious. For we may consider that all Persons after a Fit of the Gout must be either well or ill, if the first, then it is plain that then neither the Blood nor other Juices can be under any unnatural disorder, by reason the Man is well; and if so, then it is evident, requires no Alterations. For health is the ultimate end of all our intentions, all methods of Physick only aiming at altering the Juices, that lost health may be restor'd. If then the body is in health, why do we endeavour to change it, for to what would we alter it, can it be bettered when it is already well: This is certain by attempting to alter it when it is well, we may, by a specious

specious pretence of preserving health, destroy it, by altering indeed, but so as to pull on Diseases; which by a trifling sort of reasoning we would have prevented. For if Diseases in the general considered are only changes, as it is most certain they are, for he that is sick is not as he was in health: If a Man therefore is already in health, to what would he change? Would he be better than well? Sure it is sufficient to be so: This is certain there can be no Medium, no neutral Estate between well and ill, although several degrees in both. If therefore after a Fit of the Gout a perfect and uninterrupted health is enjoyed, the whole needs not the Physician, and such a state requires no alteration, and therefore Physick not only unnecessary, but unsafe. But if after a Fit of the Gout the Person that hath been so affected, remains in an unhealthful state, such methods ought to be enjoined as the then Indications require, and as in all other cases, without any regard to be had to any preceding species of Disease, but absolutely to be regulated by the present Symptoms, as has formerly been proved.

XV. But to return, if we rationally endeavour to prevent the Gout by supplying the Blood only with such Juices that will not be converted into what will produce it, it is evident it must be done by the means of diet. Or if such is become our accustomed way of eating

eating and drinking that such things are daily ingested by us, as Experience teaches us, will generate such Matter as will occasion it; there can be no methods then whereby to prevent it, but by daily wasting or spending such Matter that it may not be congested in the Blood, whereby to form this Disease, and this in all probability will most effectually be done by bodily exercise. For if we attempt to exterminate it by the help of Medicine we ought first to consider what can be within the power of Physick; for the Operation of all Medicines may be considered either as they evacuate or as they only alter. If therefore it be by the first, there must be somewhat already Peccant, because all Evacuations presuppose, if rationally administered, somewhat to be evacuated, and what here should be by that discharged, perhaps is not as yet made, because being not prepared at once, but gradually made, as being only what is superfluously left of what we eat and drink; and so then impossible to be evacuated, because as yet it is not: So that if we pretend to prevent it this way, our Evacuations must be repeated as the causes are to be administered; and how practicable that is, will easily appear if we but consider that the cause is taken in with our daily food. And yet this seems to be the only rational method to perform it by Physick; if Men persevere

severe in their accustomed way of living. For the forming a Fit, being only the effect of an unnatural separation made upon the Joints, if that Matter could have been continually discharged by another way, then it is plain it would not have been there separated. But this method being by reason of the trouble, loathsomness, pain and uneasiness, too heavy a penance to be undergone, will, as I guess, be never thoroughly experimented. Neither could there be any assurance that the success would always answer the intention, should it be religiously pursued. For although by forcing Evacuations something is always discharged, yet we cannot be assured that will be Peccant, as we sometimes too unhappily Experience. For notwithstanding we may observe that such strong Liquors as being plentifully drank discharge themselves by *Diarrhæa's*, and such ways, are not so prone to create Fits of the Gout as such as pass usually by Urine, yet we cannot safely conclude, that the often creating Purging by Cathartic Medicines, after the taking such inordinate quantities of these Liquors, would have the same effect. Because the first may proceed from a separation made in the Blood it self by the means of the Liquor, it putting the Blood upon purging it self, by someways disordering it. Whereas the last is only made by the Medicine irritating the Bowels, and so the separation

paration from the Blood, is only fecondarily effected by that irritation.

XVI. As to the ufe of other forts of Medicines comprehended under the term of Alteratives, they likewise, let there effects be what is poffible, can only alter what already is ; but can never effect what as yet is not : And this Difease being only the produce of fome ufelefs, unnecessary and incongruous parts, which being unfit for natural ufes, and not exterminated by the Secretory Veffels, remain in the Blood ; and being continually fupplied by new parts from our daily Liquors, cannot be altered or deftroyed, becaufe it is daily generated, unlefs by fomething that is as daily taken : as this is that daily creates it. So that were we really mafters of fuch a fecret, yet it could be of no advantage, unlefs in almoft conftant ufe : Befides, the very Notion of fuch a thing is a direct contradiction, for quantity is to be leffened, not altered ; and Mens Tempers, Liquors, and ways of living, are too different for fuch Catholicons. But to return, there is nothing more clear than that the Matter that caufes what we call the Gout, is *de novo* generated, by reafon a regular Fit perfectly fpend what caufed it. As is evident by the entire vanifhing of the Symptoms, by the advantage the Difeaſed reaps from it, he being more healthful and his body bettered by it, and by the apparent figns of the evaporating

ting the Matter from the very Part, so that another Fit could not be *de novo* formed, if new Matter was not again generated, and that proceeding from what we daily eat and drink, cannot by Medicine be altered in us, before it is taken by us. For which reason it now only remains to enquire what is farther to be done, if Men will endeavour to prevent this Disease. And that must be by Diet or Exercise. For as for Physick, whether such as evacuates or only alters, I think I may with as equal reason expect to be able by the means of such, so to alter or change my Body, that an immoderate quantity of strong Liquors should not have that effect upon me, as not to intoxicate my understanding, impair or subvert my bodily strength or motion, or disorder my other faculties, as that they should not by a continued use produce the Gout; that being in some Bodies as much the slow but certain effect of such Liquors, as the other is the sudden and observed one: Unless I could by some way so soon discharge these, that there might nothing remain of them upon my Blood, whereby to alter it. For as the former is the genuine and regular effect of strong Liquors, which no Physick antecedent to their use can prevent. So where this Disease is the slow but certain effect of them, no preceding methods can hinder. For all Medicines being natural Substances, can
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only operate where they then are, and therefore can never affect what as yet hath no existence : 'Tis therefore to Diet and Exercise we must apply our selves, as being the chief Bulwarks to defend us against the approaches of this tormenting Enemy.

XVII. By diet I understand whatsoever we eat or drink for our Nourishment, or for our Pleasure ; by Exercise I intend all Bodily Motion ; and if therefore this Disease is contracted by an error in these, it is most probable to be prevented by changing them. And this seems to be confirmed by Experience, in that several Persons that have formerly been severely tormented with this Disease, have delivered themselves from such sufferings, by undergoing the punishment, penance, or indeed danger of a Milk Diet, or have at least renounced Wine, and strong Liquors, and betook themselves to Water, or Milk and Water. But by this means although they may have defended themselves against Fits of the Gout, yet by making so great and sudden a change in their accustomed method of living, they have so altered their tempers as to bring upon themselves greater mischiefs. For it is very remarkable that such is the nature of our Bodies that whatsoever by a continued use is become habitual and so agreeable to us, cannot without manifest danger be left or disused ; thus have some in an habitual and unhappy intempe-

temperancy enjoyed a steady and uninterrupted health; and by too sudden a change in renouncing that untoward usage, have, maugre all other endeavours, been immersed in a legion of Infirmities.

XVIII. If then the Gout is the undoubted Off-spring of such a life, and yet such a life cannot with personal safety be suddenly altered; and if the power of Medicine is not sufficient to expel or destroy such an inbred Enemy by reason it is continually recruited by our daily Bread. And yet such Persons that often labour under the torments of this Disease, are always desirous to be exempt from its sufferings, and to be delivered from its confinement; I shall therefore now enquire what is to be safely done in order to prevent, or at least to exempt such, a longer time from the insults of this cruel Enemy. And that must consist not in the direct changing our Diet, by reason that is dangerous, but in moderating the quantity of it that no more may be ingested than what reasonably may be applied for natural uses, or if this may be thought too severe a rule. No more than what may be well purged off by the Secretory Vessels, or at least that there may be time allowed for that performance, before the Blood is loaded with new Juices. And not only so, but that Exercise may daily be used, not by Fits only and violent, but slow and continual, so that

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our Bloods may by that means, so far be moved and exagitated that it may the better preserve its Crasis : But yet not hinder or alter particular Separations, which violent and immoderate Motion will sometimes do : Besides it ought to be such that all our Limbs may be employed, so that no depending parts may have leisure or liberty undisturbedly to receive any unnatural Separations, for Motion, it is plain, prevents and hinders the settling and fixing of parts, and a temperate and moderate One helps perspiration, and yet doth not so intemperately heat us, whereby to endanger us, for violent Ones may be more hurtful to our healths, than the intire omission of any : So that Exercise to be truly useful ought to be continued and habitual, that is, every days work, and moderate, but not violent, by which means a leisurely perspiration may be acquired ; So that Superfluous, Peccant or Offending Parts that might be thrown upon a particular Part, may by this means evaporate, for all such, it is obvious, will not always pass by the other Secretory Vessels, as appears peculiarly evident in this Disease, from these following reasons.

First, Because such as have from their very youth been accustomed to continual labour, and never make an interruption in it, are never, as far as I could observe, afflicted with the Gout.

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Secondly, In that it rarely seizes or begins in the hot Months (I mean the Periodical Fits) for if sometimes it does, it seems then to be the only effect of some sudden and certain cause, and seldom continues as in the contrary Seasons.

Thirdly, In that those that are manacled with the Gout, are ordinarily in the Summer Months freed from its Chains.

Fourthly, In that such Persons as sweat freely, and especially upon the Feet, are rarely punished with it, although by their way of living they seem to deserve it. Or if by chance they are, it is seldom severe, and never, as far as I could observe, until that sweating was stopped.

Fifthly, In that a Fit being formed the Peccant Matter is plainly spent this way, as may be concluded from what appears from the part affected, as has been observed. From these reasons deduced from observations, I infer, that could Persons that have been tormented with the Gout, and who have strength and the natural use of their Limbs, be prevailed upon to moderate Exercises, and to renounce their Ease, they might, it is very probable, persevere in their accustomed way of eating and drinking, without the so frequent or severe punishments of this Disease, and that without creating any other Infirmities.

XIX. But this I am sensible will incur censure, and will be thought a severe and impracticable penance; the remedy perhaps being esteemed worse than the disease, for such Persons that have long pleased themselves with a Bottle and Conversation, cannot I presume, so far renounce them even to possess these advantages: Such therefore must enjoy their Choice, but will not always their Ease. And the only probable means whereby such can be protected from the miseries of that Disease, must be by repeated Evacuations, which, how far they will succeed, must be learnt from their use, which I doubt not, if timely and judiciously administered, may sometimes defer their torments.

The sum of what hath been here said, is, ^{Recapitulation} that the Gout is the only produce of a fashionable and easie life, that therefore if we daily administer Matter for it, it must be formed, unless that can be by some other ways continually spent: And that is best performed by Bodily Motion; but where Conditions or Circumstances are such, as that cannot be undergone, recourse may be had to repeated Evacuations, which if judiciously adjusted, and precisely timed, may sometimes discharge the offending Matter, and so defer a Fit. That a perfect change in our Diet and Liquors may prevent it, but that not to be practised, because very

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insecure and dangerous. That the most we ought in prudence, or can with safety, in respect of our Diet, suddenly do, is only to moderate the quantity; or if we will attempt to alter it, to do it by gentle and slow degrees, all great and sudden changes being unsafe.

Of a Dropsie.

SECT. III. CHAP. IV.

A Dropsie in propriety of Speech, and in the common use of the word is taken to import a watery swelling of part, or of the whole Body, and is distinguished into several kinds, which are differently named according to the part or parts they affect, thus, if it be in the Head, it is called *Hydrocephalus*, if in the Thorax *Hydrops Pectoris*, if in the Abdomen *Hydrops Ascites*, if in the Scrotum *Hydrocele*, but if it appears about the Skin, the Fleshy Parts, or Intestines of the Muscles, whether only in the Legs, or in other Parts, or over the whole Body, it is termed *Anasarca*. However, where, or in what part soever it is observed, it is a serous or watery part of the Blood extravasated, that is, departed or divided from
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the common Mass, and so being out of its Vessels, it is not within the power or reach of the circulatory Motion.

II. And these watery swellings may in respect of themselves, be considered under two heads. First, such as are purely local, by which I understand such as do not seem to owe their Origine to any default in the Blood, but meerly to the part where collected, and these when they appear outward, are usually only called watery Tumours, being often contained in a particular Membrane, and may be often observed to proceed from some external violence, as bruise or fall, whereby the part being injured becomes a receptacle for Water, and these never recede by any posture of Body. But if these are formed inwardly in a part of the trunk of the Body or Head, they seem to arise from some hindrance of the *lymphæ* in the part, and not from any redundancy of it, and being contained in their own Membranes, are called *Hydatides*: And these are extremely different from what we call a Dropsie: First, in their formation, as not proceeding from any disproportionate quantity of Water in the Blood, but from a local fault, which appears in that they never remove nor extend themselves farther. Secondly, they differ in their appearance, as being more raised, not so readily yielding to the pressure of the Fingers, or if

they do, they immediately return to their former surface, no mark, impression or *fovea* remaining, being best known by their transparency, want of colour, and absence of pain. Thirdly, in their cure, for being only local it is meerly Chyrurgical, internals of little use, the water only to be discharged from the part.

III. The other sort, which we properly call Dropsies, is a white watery swelling caused or made by the dividing, parting, extravasating or lodging of the serous or watery part of the Blood, in this or that part, and not contained in any particular Membrane, and seems to proceed from a disproportionate quantity of Water in comparison to the other parts of the Blood ; which if affecting the Legs, or any other external parts of the Body, do readily yield to the pressure of our Fingers, and but slowly recover their surface, the dent or mark not presently receding, and the Skin often shines and glitters from the contained Liquor : And these are observed to lessen upon change of posture, being generally to be discerned lesser in the morning upon first rising, and gradually swelling and becoming bigger by night. But if the Dropsie or collection of Water, is in some inward cavity of the Body, it cannot then by reason of the formation of the parts be discovered by the former means ; here therefore we must have recourse to other enquiries for

for our information, besides that of the swelling upon the part, as whether there is any perception of weight or swashing of Water upon the turning or change of posture of the Body, as likewise what hath been collected from what after discoveries have taught us, that shortness of breath, pressing thirst, and paucity and colour of Urine, have ordinarily been concomitant Symptoms or Signs of this Disease, the reasons of all which are so obvious by what hath been already said, that they seem not to require a farther Explanation.

IV. Taking then the word Dropsie in this certain and determinate sense only, to imply a swelling in a particular part or parts, made from the extravasation of some watery or serous Matter from the Blood, being, as it were, at large or loose, that is, not contained in any particular Membrane. Which therefore must proceed from some want of union or looseness in mixture amongst the constituent parts of the Blood; by reason they thus part company and divide; and this their internal division will soon be accompanied with a disproportionate quantity of Water, because thus dividing in its Vessels, that cannot in such quantities run off by the Secretory Vessels. So that let the cause of this disunion of its parts, break in its mixture, breaking or parting of the serum or water from

the rest of the Blood, and its extravasation, be what it will; which is often times marvellously different; as being sometimes derived from some Rottenness, Corruption, Tumour, change of Texture, or some Alteration or Obstruction in some of the Secretory Vessels, or some Organical Parts in or about the *Viscera*, whereby the Blood becomes tainted, depraved or broke in its Crasis, or someways hindred in its Motion. Or else immediately from some cause in the Blood it self, as where it is broke and depauperated by Hæmorrhages, Fevers or Agues, or what we ordinarily term Obstructions in Women, or such like. Yet it being the intumescence from Water that properly constitutes this Disease, *viz.* the Dropsie, for from that alone it is denominated, and in the discharge of that the cure really consists. So that although a heedful and judiciously consideration of the cause may be a means to guide our Judgments in our Prognosticks, and likewise may be of use to regulate our methods, that they may be pursued with the more safety to the Diseased: Yet, I think, can be of no great use to the curing the Disease, because Water collected is a Dropsie, and the discharge of that is its Cure. When therefore by the Evacuating this Water, the tumified parts return to their natural bigness, the Dropsie is then cured: For it is plain, if what makes the Disease is remov'd, the

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Disease must be so; and yet, perhaps, the Diseased not bettered: For it is one thing to remedy a Disease, and another thing to cure the Diseased. This, perhaps, to some will appear a trifling distinction, and yet, I am persuaded, if seriously weighed, will be found of use, as will better appear by what follows.

V. If a Dropsie then be an entire Disease of it self, by which I understand is not Symptomatical, and dependant upon some fixed and permanent cause external to the Blood, as from some default in a Consistent or Organical Part, as Rottenness, Tumour, change of Texture, or such like; but meerly proceeds from some Weakness, Loosness or want of Union in the Mixture and Crasis of the Blood, as when it succeeds Hæmorrhages, Agues, or so forth, or from want of Agitation of its parts, as in what is called Obstructions in Women, or such like, by what name soever it is called; here by discharging the Water the Dropsie is cured, and by restoring and invigorating the Blood, the Diseased is remedied. But if the cause is external to the Blood, that is, the Disease is occasioned by some ill affection of some Organical Part, as Rottenness, Putrefaction, Tumour, corrupted or extraneous Matter, made or contained in any part whatsoever: for we may often observe Anasarcaous swellings upon the Legs, attend even corrupted

ed Lungs : Or whether from Hardness, Putrefaction, want or hindrance of Separation in the Liver ? Or from any Scirrhoty, Sponginess, Obstruction or Change of Texture in the Spleen ? Or from any default or alteration in the Kidneys, Pancreas, or any other Secretory Vessel ? Or from what other cause soever that does not appear to be in the Blood it self, that being depraved or thus altered by receiving extraneous parts ? Or else retarded or hindered in its progressive Motion, by the means of something preternatural in these parts. So that the parting, breaking, dividing, and thus extravasating of the ferous and watery parts of the Blood that constitute this Disease, are occasioned by some one of these, or such like reasons. Here, I say, although the extravasated water should be discharged, and so the Dropsie at the present remedied, yet the Diseased will not be thereby cured. For the cause of these mischiefs yet remaining, either these will be *de novo* generated, or worse evils will ensue.

VI. For if the mixture of the Blood is broke, the parts disunited by the continual admission of some extraneous or disagreeable Matter : Or is only retarded in its circulation by any fixed and permanent Cause, as by Tumour, Hardness, or other hindrance, for even that will occasion it even to break and part, as may be collected from what
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may be observed in outward swellings about the Axilla or Shoulder, or by such upon the Groin or Thighs, by which the Hands and Feet will sometimes appear Anasar-cous, for the Blood being someways by these causes hindered in its progressive Motion, the ferous and watery parts recede from the others, and form these swellings. And these parts thus disceded from the rest, and being, as it were, at liberty, that is, out of reach of the circulatory Motion of the Blood, will, according to the known laws of Gravitation naturally subside, and fall downwards, until such time as being hindered in their descent, by the formation of the part, or from some other resistance they then stop and swell there ; for this reason the most depending parts, as for instance, the Legs usually first swell ; or the Cavities of the Body, as being receptacles ready prepared to retain it, become filled. However, as it is the collection only of this Water or Serum that constitutes this Disease, so it is only the discharge of that that is properly its cure : And the preventing the return of it can only be either by hindring the generating or encreasing such a disproportionate quantity of Water, or at least its thus unnaturally parting from the rest of the Blood, and so lodging upon this or that part. But when the causes of these are such as can never

ver be removed, these effects can never be perfectly prevented.

VII. There are but few Hydropical Cases, as I apprehend, if there is but such a Temper and Constitution of Body, Firmness of Parts, and Order and Tone of Spirits, as will but safely permit of violent and repeated Evacuations, but may be discharged by the common passages: Or, at least, if they cannot that way (which, by the bye, is very extraordinary) they may be from the part it self where collected by some sort of Aperture made there. But if this Disease is but the Effect of such a Cause as cannot be remedied, it is but to little purpose to attempt its cure either way, since by so doing the Diseased can only be endangered, but never remedied. By reason such methods as are necessary effectually to discharge Water, must be violent, and being so, must be dangerous, when some parts appertaining to the *Viscera*, are someway unhappily affected. And how far our Art or Skill reaches towards the repairing, altering, bettering, mending or curing any Rottenness, Tumour, collected Matter, change of Texture or Conformation, in any Internal, Consistent or Organical Part, that is, such where no application can be immediately made to the part it self, I shall shew in the following Chapter. This only I shall here farther remark, that as Purging is the most usual,
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so it is the most powerful Operation to discharge Water thus collected, and if the Body of the Diseased, during the Operation, be kept in such a posture that the Water cannot so readily subside and fall downwards, it may be the more plentifully emulged into the Bowels, and so that way discharged, as I have sometimes experienced. Neither doth it seem much material what form or sort of Purgers we use, so that they be such as work powerfully, for the quantity of Water evacuated will not be found to be from the sort or kind of Medicine, but according to their Operations, and whatsoever works most violently, will discharge most Water this way.

Of a Consumption.

SECT. III. CHAP. V.

THE word Consumption, when applied to signifie a Disease appertaining to a humane Body, is taken in the loose and general sense, to import a wasting of the solid and consistent parts. But by reason that is found frequently to be caused or derived from, or at least accompanied with some faulti-

faultiness or decay of the Lungs, it is now usually by way of eminence applied to that only; and then it is taken to signify a wasting of the consistent Parts from some Rotteness, Exulceration, Putrefaction, Tumour, unnatural Matter, Decay or Alteration in them. And is supposed to answer to the Greek *Pthisis*; or Latin *Tubes pulmonaris*. The Cough, Hoarseness, shortness of Breath, often uneasiness in or about the Breast, the bringing up and expectorating foul, purulent and unusual Matter, do give us probable proofs that the Lungs are some ways affected. But the Dissections of the Bodies of such as have died under these Symptoms, do afford us undeniable ones that they were so: And the Hectic heats wasting or consuming of the consistent parts, attended sometimes with a large number, and great variety of other concomitant Symptoms, as Thirst, nocturnal Inquietudes, profusive Sweats, Loosnesses, a general loss of Strength, and in short, an universal decay, seem probably to be caused, or to proceed from thence; by reason those Symptoms that seem proper to the Lungs do usually in such Cases precede these. But whether the Lungs or the Blood are in this Disease first affected, is not much material, since the Lungs are most certainly affected in it. And if they or any other Organical Part is so far injured, rotted or corrupted as to contain any foul, purulent,

purulent, corrupted or extraneous Matter, and that at large, as not bound up in any peculiar Membranes ; so that some parts of it may be gathered up, or received by the Blood, it will taint, contaminate, corrupt, or someways so alter it, that such as the above recited or some other unnatural Symptom will arise.

II. And the Blood being continued in its circulatory Motion by an external impulse from the Heart and Vessels, will, according to the capacity of the Conduits through which it passes, be equally impelled into every part ; and so, if not hindered, must supply such corrupted parts as well as others, with fresh materials, which will be there changed into such extraneous Matter ; and if this be in such a part as by reason of its formation or situation, it cannot be discharged, it must necessarily be encreased, and there accumulated. And the Blood not always equally filling its own Vessels, must of course sometimes gather up or receive into it some parts of this thus damned up Matter, which being unnatural and very disagreeable to it, will infect, poyson, or some ways alter it, and thereby render it unfit for its ordinary and natural uses, and so a variety of unusual Symptoms will ensue. For health, in relation to the Blood, does consist in some natural Temper, State or Condition of it, which if altered, the Man must,

must, as being part of him ; and it is most evident that will be altered by the admission of any unnatural Matter into it, whether ingested with our food by the common passage of the Mouth and Stomach, or whether sucked in with our Vital Breath, or whether made or generated within us, or whether admitted by any other way, all which daily instances so abundantly confirm, that, I suppose, it would be thought by most, trifling and but superfluous to produce any particular proofs. If therefore the Blood is continually infected, corrupted or altered from some such accumulated, purulent or extraneous Matter, although Medicines may sometimes alleviate, mitigate, or ease this, or that particular Symptom, yet it is clear the Blood can never be re-established in its former, natural and healthful state, unless this Matter, that is the immediate cause of these Insalubrious Effects | can be removed and discharged. This therefore shall be the enquiry, what means, methods or helps we can have, whereby to mend, alter, better or cure such Symptoms as are taken to constitute a Consumption, and are derived or caused from some unnatural, unusual, purulent or extraneous Matter, made, generated, separated or collected upon the Lungs.

III. But

III. But that this may be the better comprehended, it will be necessary to remind my Reader of what hath been already proved, *viz.* That every Organical and consistent Part always remains in relation to the rest of the Body, in the same fixed and determinate place, and of consequence can neither receive nor discharge any part or parts but by the assistance or means of some other moving Body ; and there being nothing common to the whole Body, by which this can be performed, but the Blood, it must be concluded, that must be the instrument by which it is done. When therefore any such Part is corrupted, impaired, putrefied, or someways altered, injured, or unnaturally affected, and is so situated as not to admit of any application immediately to it, there can be no way whereby to cleanse, digest, mend, better or cure it ; but by the means of Medicines internally taken, which, if they ever reach the Part, must be conveyed thither by the means of the Blood, there being nothing else in a Humane Body, by which it can be performed ; and then such Medicines will exert their powers and energies there, as I have formerly proved. And the Blood can neither mend, repair, heal or cure an injured consistent Part, unless that first be in a state befitted for it (that is, it will not always do it) as may be concluded from every days observations,

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where

where notwithstanding some Diseased Men eat and drink, yet their Bodies do not nourish proportionably, but rather waste. When therefore the Blood is tainted, infected, or someways altered by the putrid or extraneous Juices it receives from a consistent Part, by which it becomes unfit for such uses ; it is plain in these cases in prosecuting a cure, we seem to move in a Circle, for the injured consistent Part is only to be bettered or cured by the Blood, and that very Blood is infected, tainted or poysoned from the consistent Part, by which it is rendred unfit for such a use ; and so is not to be remedied unless that cause can be removed, by which it is thus corrupted, which from the very situation is impracticable.

IV. But to pretermit this sort of reasoning, that may perhaps be thought intricate, but not satisfactory, we will descend to the thing it self ; but in order to that we may first consider that all preternatural affections of the consistent parts may be comprehended so far as is necessary to our present design under some one of these general heads.

First, Either under such where they are impaired or ill affected from some corrupt, purulent, sanious, unnatural or extraneous Matter, made, generated, separated or collected in them, but left, as it were, at large, that is,
when

when it is not contained in any proper Cystis, Membrane or Coat.

Or, Secondly, Under such where such extraneous or unnatural Matter is contained within its proper Coat.

Or, Thirdly, Under such where a part is as it were *de novo* formed, and is endowed with its proper Vessels, as natural parts are.

Or, Fourthly, Under such as where some Organ that is born with us, becomes so changed and altered, that it makes and prepares unnatural and offensive Juices; being perfectly perverted in its natural Offices.

When any of the innermost Organical Parts are thus affected, and their situation or formations are such as can admit of no applications to them; there can be no way whereby to attempt the remedying them, but by the Blood, and that is not to be bettered, unless that cause from whence it is thus corrupted can be removed, and that in the present Case being situated in the Lungs, is not to be done, as I shall presently prove. But before I descend to that, I must premise, what Experience will always teach us, that any purulent, sanious, or corrupted Matter, in what part soever made or collected, and not contained in its own Cystis, will, if it cannot or is not discharged, sooner or later, according to its nature, do these two things, *viz.* corrode, fret, rot, destroy or injure the contiguous and adjacent parts; and

infect, taint, corrupt, poyson, or someways alter the Blood. The first proves it self in that such Matter will gradually work its own way. The second may be proved from the Heats, Inquietudes, Uneasinesses, and other Symptoms, always someway or other attending it; and the vanishing of such, when the Matter is discharged. And these two will always succeed sooner or later, according to the virulency or disposition of the Matter, and the Nature and Firmness of the part. And such Matter being without the power and reach of the Circulation, becomes intirely under the Laws of Gravitation, and so of consequence tends downwards, so that if it is made or generated, or can descend to a part where Nature hath already formed a passage, or where Art can make one, if that be at the bottom of the Cystern where this is contained, it will flow out and discharge it self; by which means the adjoining parts and the Blood will be delivered from any farther mischiefs from it. But when the Lungs or the parts appertaining to them, are affected or loaded by such a collection of purulent or extraneous Matter, which cannot, by reason of their formations and situation discharge it self, as having no passage at the bottom, it is no wonder if lodging there, these two usual and natural Effects of it, *viz.* The corrosion and spoiling the contiguous parts, and the taint-
ing

ing and infecting the Blood, be sooner effected by it here, than in most other parts of the whole Body.

First, By reason of their sponginess, and their continual Motion, by which mean Matter will more easily insinuate into the empty spaces, and spread sooner and farther, being always moved.

Secondly, In that the Blood passes in greater quantities here than in most parts of the Body.

And as these two are the regular effects of Matter made and lodged, so on the contrary if the consistent Part where it is thus generated, is so situated or fashioned as it can flow out, or so entirely discharge it self that nothing of it stop or lodge to form new Cysterns or Cavities, such Parts will ordinarily heal of themselves, unless it be in a very ill state of Blood; in which separating and throwing of parts in abundance and they finding an easie passage this way, and then continually flowing to it, so loosen, weaken and disunite the consistent part it self, that it still gives place, and more readily yields passage to them: So that although the Matter does not lodge, yet the Tone of the part being by the corruption or depravity of the Blood, much altered, lets go such a quantity of Juices this way, that other parts are injured by the want of them; or where the Blood is so ill affected, that it will not give nourishment for the repair, filling up or healing such

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injured

injured parts. For although the making or separating corrupt Matter is a performance of the part it self, yet that being altered or spoiled by the state of the Blood, the Blood must be first mended, before the part will ordinarily be healed. For notwithstanding by some powerful external application the surface of the sore may be so altered, that what runs that way may appear better digested, and the part it self may be sometimes by this means healed, yet the Blood being so depraved the Diseased will not be cured, for it will still someways or other manifest its ill effects.

V. But to return: although corroding and spoiling the adjacent parts, and tainting and infecting the Blood, will always attend Matter thus lodged; yet our Bodies being so fashioned, that there are but few parts in which it can be collected, except the Lungs, but it may someway by Art be discharged; for although such Organs as are seated in the innermost recesses of the Body, where neither our Eyes nor our Fingers can inform us, have sometimes contained Matter that hath created Symptoms, not unlike such as have been found to have proceeded from ill affected Lungs: Yet by reason when it hath been timely discovered in such, it hath sometimes been discharged from them, and so not then so dangerous; as when it is made upon the Lungs, by reason it hath never yet, as I apprehend,

prehend, been attempted by Art to draw Matter immediately from them; neither can I from a consideration of the formation and use of them ever believe it practicable. It is true, Matter hath been frequently drawn out of the Cavity of the Thorax, and Coughs and such Symptoms that sometimes attend an ill affected Lungs, have accompanied such, but notwithstanding it is a question to me, whether that proceeded out of them, since such Symptoms, as Coughing, and the like, may be created by an affection of the neighbouring parts, subservient to respiration.

VI. Taking it then for granted, that corrupt or purulent, or, if these words are not comprehensive enough, extraneous Matter made, generated or collected about the Lungs, and not contained in a proper Cystis may occasion disorders in the Fluids, and Wastings and Consumings of the consistent parts attended with such concomitant Symptoms that together constitute what we call a Consumption, and that these being derived from such a cause, are not to be remedied, unless that can be removed. Our enquiry now shall be, whether it is possible, that such Matter can be so perfectly discharged from them, that these Symptoms may admit of a remedy. Whosoever will but survey the Lungs will evidently discern, that Nature hath formed but one passage, *viz.* That common and known one of the Trachea whereby Mat-

ter made or collected there can be discharged : And the situation of that being such as whatsoever passes there must ascend, which therefore must require some force to perform it, which must be done by some violent and preternatural Motion of the parts appertaining to respiration, by reason as the Lungs are placed, there can be nothing else can affect them ; and this Motion is what we call Coughing. For it is most certain, that all Juices in a Humane Body that are not kept moving by the circulating Motion of the Blood, must naturally subside and tend downwards ; and therefore are not raised or forced upwards, but by some force exceeding their weight. And the Lungs being nothing but thin Membranes united and knit together in the manner of net-work, by the Blood and Air-Vessels, forming innumerable Sinuosities, and all bound up by a common Membrane, and seated in the hollow of the Breast, having no Motion common to them, or at least distinct from what may be in the Blood-Vessels, or the branches of the Trachea, and being thus situated that they cannot be pressed or squeezed by any of the consistent neighbouring parts ; and whatsoever proceeds from them being to be raised upwards, it is impossible they can be under any such force, whereby Matter that is there collected, can be entirely raised up and discharged. And indeed were they capable

able of having or receiving such a force it must be fatal whenever it was used, by reason the vital Blood must be equally impelled up with such unnatural Juices. And yet it is certain they are so composed that Coughing does discharge Matter from them, and that being only by Fits which usually ceases upon the bringing up of Matter. We may conclude that is caused by reason these parts are someways burthened or disturbed by it, and therefore being irritated, fall into this violent Motion, by which such a proportion of it as is within the reach of this Motion is forced up: By which means the parts again continue quiet, until by the accession of new Matter, or by some change in the Situation of it they are again solicited into Motion; and so Coughing seems to be repeated, as an occasion of it is administered by this Matter. And yet notwithstanding this admirable contrivance in the make and situation of the Lungs, they are sometimes so compressed and forced by the violence of Coughing, that Blood is pressed out with the extraneous Matter. For they being affected by the violence of this Motion, all the contained Juices in them must be so, hence some parts of the Blood become drove out of their proper Conduits, and come to be discharged this way in very different forms, as may be inferred from the various

various discolorations to be observed in what is expectorated.

VII. Such then being the nature of our Lungs, that extraneous matter lodged there will occasion Coughing, and such being their Structure and Situation, that such cannot be entirely discharged by it, nor safely by any known way ; and therefore will sometimes create such Symptoms that are taken to constitute what we call a Consumption. In order then the better to illustrate what hath been already said upon this Topick, and for the more easie comprehending of what will follow upon this head, I have thought it not improper here briefly, according to my professed method, to touch at some other Cases that appear plainly to be the effects of purulent or extraneous Matter made or generated in other parts, but this only under some general heads, and accordingly shall only consider them.

First, When such Matter is made in such a part of a Humane Body, that it will gradually make its own way : Or at least may be by Art from thence discharged.

Or, Secondly, When it is generated in such a part as by reason of having some natural passage it cannot lodge, but must flow out as made.

Or, Thirdly, When it is prepared in such a part as it can neither discharge it self, nor be by Art discharged.

Under

Under the first head I comprehend all Matter made or collected about the Muscles or near the surface of the Body, and the cure of these being for the most part Chyrurgical, I shall pass them over; this only I shall remark, that if they are derived or continued from any ill discrasy of the Blood, that then must be altered or bettered, before these can well or safely be cured. For otherwise the Blood having continued to separate this way, and if by the power of outward applications it is hindred in it, it must in all likelihood transfer such into some other parts: For although wheresoever unnatural Matter is made or separated, it is plain there must be some default in the very Part, by reason the making or letting pass such is not its proper use. Yet there is a marvellous difference, where a consistent part is thus made or continued faulty, by reason of the ill state of the Blood. And that where the Blood is kept in an ill or preternatural state, because the Part is faulty, that is, the Blood is poysoned from the Part. In the first case the Blood must be mended before the Part can safely be cured; in the last the Part must be cured before the Blood can be mended.

Under

Under the second head may be comprised Gonorrhæas, as likewise a flowing of some small extraneous Matter at the Nose, Ears, or indeed at any other passage or aperture of the whole Body of either Sex, whose natural Situations are such, that Matter cannot well lodge, but must flow from them. But these under this head being so very different in their causes, beginnings and continuance, it may be necessary for the better comprehending them to distinguish them into two sorts, as, first, into such as seem to have been caused from something actually made within us; and, secondly, into such as proceed from somewhat received from without us.

The first of these being ordinarily either the effect of some inflammation, which will be painful when ripening, but when once broke, if the Matter meets with no hindrance in its discharge, is rarely of any long continuance, much trouble, or any danger, for it will soon cure without outward applications; but if the Matter stops, that must be removed. But if such Juices were the effect of a separation from some ill dycrasy of the Blood, then they may give trouble, by reason that must be mended, as may be observed from the fluor from Women, and sometimes even from the Piles.

But

But the second sort that are affected by somewhat received from without, as I think, may be particularly instanced in Gonorrhæas got in impure Coitions; there the Organical parts themselves appear first injured by the poysonous Particles then received, which seem to fix first upon them. For we may usually observe the Genitals, and the Parts appertaining and adjoining to them to be severely afflicted, long before there is any appearance of the effects of this poyson, in any of the remoter regions, whereas had it immediately passed into the Juices, it must have been by them quickly whirled about the whole Body: It is not improbable the reason may be that the raging lust and hasty desire of Pleasure, felt in Congress, may have a power to dilate or someway so to affect these Parts, as to render them more susceptible of the poysonous steams, besides, perhaps the Emission yields a kind of vacancy for their reception. And these thus injured Parts being so far seated within us as not to permit of applications immediately to them, whereby to evaporate such poysons, nor to remove or hinder them, from corroding and Ulcerating the Parts upon which they fix, they gradually come to separate and make such Matter, as constitutes a Gonorrhæa. But be it as it will, it matters not to what I chiefly aim at; for I think,

think, it is certain these Organical parts are first affected, and the Blood only afterwards from them, by reason if this running by the Urethra is untimely stopt by improper applications, the Blood becomes much the sooner infected by the poyson, as evidently appears by the variety of succeeding Symptoms, which will after that soon break out in very differing forms. It is true, those Parts being thus altered and injured by the poyson thus received; and being continually supplied by the Blood with fresh Matter, that will be by these thus poysoned Parts, converted into such foul and purulent Matter; which, perhaps, by change of posture of our Bodies, or from some other reason, not passing so readily away, or these parts by a continual accession of it, being more altered; the Blood does become poysoned from those very Juices the Part hath thus depraved by receiving again some part of them into it, but much the sooner if the running of this corrupted Matter is by any ways untimely stopped. But if by repeated and continued Evacuations such Juices as would have continually supplied these thus poysoned and injured Parts; and would have been by them changed into such purulent Matter, be continually diverted and carried off another way: So that these Parts not now receiving so plentiful an accession

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on of them, the quantity of that foul Matter that did that way flow, will be gradually lessened, and its virulency abated. For the Matter there made not lodging, and the parts not being so fully supplied, and the poyson spending it self by the fluxion, the Parts gradually heal, that is, recover their former natural state. This being certainly so in fact, it must be one of these two things that occasions that mighty difference so often to be observed in the facility and difficulty of curing Gonorrhæas (supposing the Persons affected to be equally governable) that is, either according to the degrees in the virulency of the received poyson: Or according to the disposition of the affected Person. If a healthful Person, such a one whose Blood and Juices are uncorrupted, that is, in a perfect natural state, be affected, although according to the degrees of its virulency, it may require more or less time, yet it will be remedied without much difficulty. But if one is severely affected whose Blood and Juices are much depraved and vitiated, and so perhaps disposed to preternatural Separations, or, perhaps, on the contrary, to Inflammations; here these Organical parts being thus injured, readily become the receptacles for such Peccant Juices: Which being farther changed by these parts, become a new Contagion to infect

infect the whole Body. So that such a case may prove a work of difficulty, and require great thought as well to correct and mend the Blood, or so to dispose it as that the affected parts may be cured. For where there is nothing more required to be done, but curing these Diseased Parts, and the Blood and Body is well disposed for Evacuations, here they alone, if judiciously administred, and rightly adjusted, will be always found a sure and effectual remedy. For the purulent Matter there made, being continually spent, and the Parts not receiving proportionable supplies, will naturally and gradually heal, that is, recover their former state, by reason the Matter not stopping, and the poysonous parts wasting, there can be nothing to hinder them, there not being fresh Juices to do it, they being carried and turned another way. And any Evacuations in this case where the Body is well disposed for them, whether by Vomitings or Glysters, if strong enough sufficiently to move the Bowels, and repeated often enough, will here perform what is usually done by purging: This I only speak as to their general use, but not expediency, as being incumbred with more trouble and greater inconveniency in both, and contingent danger in the First. And I doubt not but a Salivation if tried, would

would equally do it. I would not be misunderstood, I do not recommend it. Nay, I disapprove it, for this Case if judiciously handled, can never require so severe a remedy : But a Salivation turning the Juices by plentifully discharging them another way, must of course hinder the Parts affected of their usual supply, by which means they may, as in the former Case, recover ; but of Salivation more particularly in the following Chapter.

Under the third and last head may be comprised all Diseases proceeding from extraneous Matter, so made and contained that it cannot discharge it self, nor be discharged, without manifest danger to the life of the Diseased ; as when such is prepared or collected in the Brain, Heart, or upon the Lungs, or such like, for the use, structure or situation of these parts being such, that the Matter forcing its own way, would be for the most part fatal ; and the uncertainty and danger that must attend such Operations have as yet deterred Men from attempting them. For as what hath been performed in what we call an *Empyema*, does not come up to what we are now treating : Diseases then created by such Matter must be incurable.

Z VIII. But

VIII. But since Men naturally desire to preserve even a wretched and expiring life, and since it is certain they may by improper and irregular ways of living untimely break or cut its thread; it will follow that by religiously avoiding such things as are hurtful, and industriously pursuing such as are only beneficial, or, at least, harmless, they may spin it out to a greater length. And since methods have been established for this purpose, I shall here briefly and impartially enquire into the reasonableness of their use, but that I may do this with some method, I shall reduce them into these two heads.

First, Such as seem principally intended to respect the Lungs, that is, the part immediately affected.

And, Secondly, Into such as only relate to the concomitant Symptoms.

Medicines that may be accounted as belonging to the first of these, may be again considered as of two sorts, *viz.* Pectorals properly so called, and Balsamicks. By Pectoral, I think, may not improperly be understood Medicines that have been esteemed to have a power to abate or ease Coughing, by helping Expectations, that is, the bringing up of somewhat that being unnaturally separated

ted or made, from the Blood, was offensive to the Lungs, or some parts in the breast appertaining to them. By Balsamicks may be understood divers kinds of Medicines that are supposed to be endowed with a healing power, such as are several natural Balsams, and divers factitious ones in several preparations and compositions.

Again, under the second head, *viz.* Such as relate to the concomitant Symptoms may be numbred,

First, Either such as seem principally intended to respect the disorder only of the Blood, that is, the Hectic Heats, Inquietudes, and by consequence only the other Symptoms that proceed from thence. And under these may be comprised all such things as are thought to mitigate and assuage that, as Emulsions, divers Preparations of Oily and cold Seeds; and, if I may name it, for it hath been in some use, the celebrated Cortex.

And, Secondly, Into such as have been esteemed not only to cool, but nourish also, and amongst the chief of these are to be numbred Asses, and divers other sorts of Milks, Snails and their Preparations, and the whole farrago of this Tribe.

Or, Thirdly, Into such as give only some present ease or relief to the most troublesome Symptoms, whether in the affected or any other part; and under this head are only to be numbred Opiates, in several Forms and Preparations; for by these the violent Fits of Coughing are quieted, the uneasie nights are passed away in slumbers, and some Truce is gained from the troubles of a wasting and wearied Life. Under some of these heads may be comprehended the principal methods that are in ordinary use in this Disease: With what success every One's Experience will best inform him, if he please but to be impartial and heedful in his Observations. I shall only examine into the reasonableness of them, and what I think may be expected from their use, according to such principles that are known, and are certain.

XI. First then, as to Pectorals, supposing, but not granting, them to be endowed with a peculiar power to lubricate these parts (which, by the bye, is inconceivable) and also to help to divide, part or unloosen tenaceous Matter that here sticks or adheres, and so by that means to besit it with greater ease, to be by the help of
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Coughing discharged. Yet here what benefit or advantage can be reasonably expected from them, where the extraneous Matter is already made, segregated and lodged, and cannot be expectorated by reason of the structure and situation of the affected part, and not from any unfitness in the Matter. So that if Pectorals were of any real use towards the separating such Matter by the Lungs, they could be here of no advantage, by reason that here there is an unnatural and faulty separation, by which the Body waists, and life is thereby endangered and why then to be encouraged. But, in reality, I am apt to think there is no such effect attends them, for if sometimes they seem to facilitate Expectoration, they seem to do no more than unloosen the mixture of the Blood, and in that perform no more than what is common to other Medicines helping Separations. However, in this case we may observe that whenever Matter is so congested as to cause Coughing, that part of it that was in the reach of that Motion will be discharged; upon which usually the Coughing ceases, and then by intervals, repeats as the parts seem by this means solicited; and thus returning it will ordinarily be again brought

up, until such time as they, *viz.* the Lungs, become so much impaired, injured or rotted, as they become unfit for such a performance, and then that discharge ceases; not for want of Matter, for perhaps the Lungs are full of such, but for want of a Power, Capacity or Ability of the affected Parts; and thus we may commonly observe Expecterations in such cases stop before Men die. And that this is so, I think, appears farther evident in what is called *Vomica pulmonis*, where Matter coming to such a fulness is discharged by violent Coughing, which will again cease until fresh Matter being fully congested, it is again occasioned and so it repeats. For whatsoever is brought from the Lungs must be by the Motions of the parts contributing to respiration, by reason what is once separated from the Blood, and so without the power of the Circulation becomes under the laws of Gravitation, and so must descend, so that it cannot without such assistance be raised up into the Mouth. For this noble Machine, a humane body being made out of the common Mass of Matter, and so only differing from other Bodies, but as it is more excellently formed, and more divinely fashioned, does remains in all its parts

parts incident to the laws of Motion, whether it be received by Impulse or Gravitation, as all other Physical Beings are. It is true the great Author of Nature hath superadded to this mass of Matter, that thus constitutes a humane Body; an active power of beginning, altering, continuing or hindring Motion in some particular parts that are ordained for such uses, as properly belong to a free and intelligent Being, as every individual Man may easily experience himself to have a power to move or not, to walk or sit still, to do this or not do it: Which power far transcends, and is exceedingly different from any thing that can belong to mere Matter; but yet that power is limited to some parts only; for such as are immediately subservient to Life are not under it. Thus it is not in our powers to regulate or alter our Pulse, the Motion of our Bowels, or such like. Neither can we by any immediate act of the will, discharge or remove any unnatural Matter, made or deposited in any particular part, not having Organs whereby to do it. If therefore such is Prepared or Collected in a part so situated or formed that it cannot flow out of it self, nor be discharged by the Motion of the Organical parts, by rea-

son of some default in such Parts, to pretend or to propose to besit this to be discharged, which is already in its very nature fit, seems to me mere trifling, since there is nothing wanting for its discharge, but a power and capacity in the Organ, by which it should be done. For it being here to ascend, there can be nothing but a force from some Organical Motion that can raise it upwards. And to this it is evident Pectorals can contribute nothing, and therefore in this case can be of no use. It is true there may be some things that carry the name of Pectorals that may be of some small advantage in the present Case, such as *Tabulets*, *Troches* or *Lobochs*, but then not properly for such ends as seem to require Pectorals; but only as being held in the mouth and gently swallowed do someways lubricate and please the parts about the *Fauces*, that they are not so readily drawn into Coughing, whilst their effects remain, so that somewhat may be here offered in Justification of their use, but how far that will balance other inconveniencies that may arise by them, I humbly offer to be considered.

X. But as to the second sort, that I have termed Balsamicks, I can see nothing that can be hoped for, or promised by their use. For if they are given with an intention of digesting, cleansing, healing, or someways curing the affected Part, they are a Jest; for what one instance in Nature can be given wherein the part can be healed or cured, so long as the Matter lodges in it; for the Part being the Cistern to contain it, how can it be so brought together to be healed or cured, when the very Matter that is in it must hinder such agglutination: The very supposing it is a contradiction. Neither is it ever attempted in Chyrurgery; where to pretend to heal, before the Matter is discharged, would be looked upon as an effect of the oddest Ignorance. It is true some, both Natural and Factitious Balsams, are experienced in Chyrurgery to be noble and useful Remedies: That is, being sometimes applied to a sore Wound or Ulcer, they so dispose and alter the parts of it, that the Matter that is there made becomes afterwards digested, that is, so bettered in Colour, Nature and Consistency, that the grieved part is experienced to be in a promising Condition; but this change
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thus made only in the Sore or Ulcer by means of which the Matter thus becomes digested, seems only done in that the Balsam being applied to the Sore it self, so alters the surface of it that the *Pus* that is there made, becomes so much bettered ; for it is evident the Blood, from whence this is by the Sore leparated, is not by such an Application mended. So that although Experience teaches us that Balsams thus outwardly applied are really useful Medicaments to digest and better Sores, and so to dispose them to heal ; yet we cannot from thence infer they will be so if inwardly taken ; by reason the first proceeds from the immediate Application of them to the griev'd part, but the last must be done by altering and rectifying the Blood ; between which two so different effects, there is no manner of Connexion or Agreement. Neither will I suppose this way of reasoning be allowed in other Cases, for if it should be taken for a reason, that any Medicine that will digest or dispose a Wound to heal if outwardly applied, must do the same if internally Administred : The same effects may with equal reasons be expected from all other sorts of Medicines, and then that

that which is an Escarotick, that is, will suppress, eat of, or destroy loose and unnatural flesh, if applied to the part, may therefore, if internally taken, eat off a Carnosity, or root out Polypus, which, I believe, few will be so bold to venture, or so vain to expect. It is true Ulcers, Sores or Wounds, are always found of easiest cure in such Persons whose Bloods are in a natural and healthful state, and on the contrary attended with more or less difficulty according to the degrees of its corruption: So that sometimes there is a necessity to correct and mend that before outward Applications will have their desired effect: But then, I apprehend, this will not be always done by Balsamicks, but by Methods and Medicines adjusted to the particular Cases, not but Balsamicks may sometimes in such Cases have their use. Farther I never as yet could observe any one internal Exulceration that ever could be said to be really cured by Balsamicks internally taken. In Gonorrhæas where the Matter does not often lodge, and therefore if ever of any such use it might reasonably be expected from them there. Yet even there I need not insist upon the instance, it being so notoriously known, how wretched,

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ed, how trifling and how unsafe they are, if only relied upon.

XI. The next thing to be considered, is the second general sorts of Medicines that seem principally to regard the Symptoms that are rooted immediately in the Juices, and so are common to most parts of the whole Body, such as are the Hectic Heats, with the consequences to that, and the wasting of the consistent parts, and these, although before branched under two sorts, yet here may be conjointly considered. Amongst the chief of these are to be numbred several Milks, Milky Distillations, Emulsions, divers Preparations from Snails, cooling and oily Seeds, with their various Compositions, all which seem to be levelled, to cool and mitigate the Hectic Heats, and to nourish and restore the consistent parts. It is most certain some Meats and Drinks have a power to heat us, that is, they sensibly increase that Motion of the Blood, from whence arises a perception of heat. For heat naturally considered is the Motion of the minute parts of a Body, which if in such degree that they exceed that of our Senses, they are then to us hot. And we may experience we have often a perception of heat by the use of
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strong and fiery Liquors. But it is not so certain whether any thing we take as Food or Physick, will so directly cool us, that is, will hinder or retard that Motion that gave us the perception of heat, that is, that will actually lessen or hinder this Motion of the minute constituent parts of the Blood, in which heat consists. That several things will someway hinder the Circulation of the Blood, is certain, because life may be destroyed by such. And that the Circulation being stopped, the Blood cools. And that this may be performed two ways, either by the Spirits and Organical parts, by whose Motion the Circulation is made: Or by the Blood it self, by rendering that unfit or incapable to be so whirled about. But whether an actual preternatural heat can be safely extinguished in our Bloods, by the means of any Medicine is not so certain. For although some Liquors that are called cooling, and indeed are so to us, comparatively taken, such as Small-Beer, Limonade, Emulsions, and so forth, do usually produce such effects upon us, as we call cooling; that is, they gratifie and restrain our present Thirst, which has been usually looked upon as an effect of Heat, and therefore such things

things as perform that, have been esteemed cool, when really in this they seem to do no more than what all cool Bodies do upon any other parts ; for when any Body whose parts are less agitated than those of our Bodies be applied to us they will be cold to that part they touch ; but yet notwithstanding they do not seem to lessen or restrain that unusual Motion of the Blood, by which such heats are created ; it is true they likewise moisten those parts, upon which they stay or by which they pass, which usually are dry, and so by that means likewise farther gratifie our thirst. But they are so far from extinguishing always any preternatural heat in our Bloods, that they will sometimes, if improperly administered, create Fevers, and inflammatory Diseases ; and the same effects will sometimes be caused by the untimely Applications of any cold Bodies outwardly, as may be confirmed by several instances, as when hot by going into the cold Water, or exposing our Bodies too much to the cold Air, or such things. Nay farther preternatural Heats, or, if you please, Fevers, are never immediately extinguished by the use of such things, it is true such do not usually encrease them ; and Heats not being continued or
encrea-

increased by new Matter, the Blood will someways or other defecate it self, either by the Secretory Vessels, or by some other passages, by reason the preternatural heat of the Blood is nothing but the effect of that Intestine Motion of its minute parts, by which it will some way or other despute or purge it self : Although not always to the safety or advantage of the Diseased ; and that being done its Heat, and the Effects of that cease. For what we term cooling the Blood, when heedfully considered, will be found nothing but the lessening or extinguishing preternatural Heats, which is only the return of it to its natural Heat, State and Temper ; for our Bodies, during Life, can never be positively or actually cold ; that is, its parts can never be so stripped of such Motions, but that will give us a sense of what we call warm ; and when it is only relatively taken, that is, when it is cold, in respect of what it naturally should be, it is plain it is then changed, and so is a Disease. So that by Meats and Drinks usually taken as our sustenance, which we phrase cooling, if we truly weigh what we intend by that expression, we can understand no more, than such things that give us
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no unnatural Heats. And by cooling Medicines if really there are any such, for of such as absolutely destroy it, as poysons, is not the question. But such Medicines only as have a power someways to retard or hinder these immoderate Motions that cause this Heat; and if this is any ways done to the advantage of the Diseased, it is, as I apprehend, only by disposing of it, *viz.* the Blood, to regular Separations. For as by inordinate Commotions in the Blood, heats are encreased, and by that oftentimes the Circulatory Motion intended, and then the natural Separations are depraved or hindered; upon the return of which, *viz.* The natural Separations, the Heats and Disorders usually cease, by reason they seem to have been occasioned by what will now be exterminated by such. For whatsoever hath a power absolutely to arrest and hinder this Circulatory Motion of the Blood, and thereby extinguish its Heat, must be a poyson, because Heat and Life consist in that, and are inseparable. So that when we use the words cold, cool or cooling in respect of our Bloods, we only use it comparatively, *viz.* in contradistinction to unnatural Heats, there being

ing neither Food, Drink nor Physick absolutely so.

XI. However, be it as it will, Milks, and amongst the rest, as deserving to be first named, Asses, and all the rest of the last named Tribe of Medicines, are rarely observed to create heats, that is, if they are properly taken it is no genuine effect of them, for they usually occasion no hurry in the Blood, and therefore not doing that, they seem to be be-fitted for nourishment; for nourishment in Nature being only an addition or apposition of new parts to the solid and consistent ones, by which they are repaired or encreased, which in a humane Body is brought to them by the means of the Circulating Blood. Now nothing is more certain than that Motion is opposite to rest, and the more violent any thing is moved, the more unfit it is to fix and rest: From whence it will follow, that the slower the Blood moves, the better it is disposed to adhere and fix upon the consistent parts, that is, the better it nourishes: And on the contrary the more violently and impetuously it moves, the lesser it nourishes, by reason by that it is hindred from uniting; and this appears evident, in that Men usually waste by heat, as particularly in Fevers, and

the more the Blood boils, that is, the more the Diseased burns, the sooner he wafts ; and on the contrary where the Blood moves but slow, Men rarely waft, or if they do, it is because they swell in other parts, or that the Blood breaks or parts too much by some particular Separations ; but in this state of Blood they usually rather puff and swell, or else nourish plentifully, for the parts of the Blood not being sufficiently moved, more readily adhere and unite to the consistent Parts. But although these Milky, or other Preparations, will not of themselves create heats, or occasion unnatural disorders, yet such already existing, and being continued by a permanent, and not to be altered cause ; these Medicines, although perhaps they will not directly encrease them, yet cannot remedy them : By reason such having a certain source from whence they are derived, they are not to be cured unless that could be removed. And such I take to be the nature of our Bloods, that when under any preternatural heat or disorder, it will in some period of time, some way purge and defecate it self, if it can continue in its Circulatory Motion, and by that means the disorder ceasing, it will return to its natural temper, unless
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when this its disorder is continued by some permanent and lasting cause, so that it is by that continually renewed. And I am apt to think most tedious and languishing Fevers, by which the Body wafts, are derived from such a Cause; and that even such as have succeeded violent ones, have been continued by reason of some faulty separation upon some internal Organical Parts, by which the Blood being afterwards tainted, these heats have been kept up; and this is not merely conjectural, for Dissections of some Persons have confirmed me in it, where plainly appeared upon some parts of the *Viscera*, the certain marks of such Separations.

XII. It is true, a wasted Body, and a languishing and almost expiring Life, may be perhaps preserved for some hours, days, or perhaps weeks, by a constant and uneasie use of such things longer than if such affected Persons had pleased their Palates, or gratified their Appetites with a more desirable and unconfined way of living, but yet by this penance there is no hope of being delivered from this Disease, the most that is to be expected from it, is only gaining a short reprieve from a certain and approaching death. And since then in this deplorable

Case we can by natural helps pretend to but one or both of these two Ends, *viz.* Either to spin the thread of Life a little the longer, or to make the remaining hours somewhat the easier. Both which, I apprehend, may be done by a method very different to this ; and that is by permitting such things, that, like the above named, create no direct heat, but are to most Palates much more grateful ; and, as I have experienced them as effectual to all intentions. For cool Seeds with testaceous Powders, all Milks and such things are to some Persons extremely loathsome, so that their sufferings in their Food and Physick are equal to those of the Disease ; and then the enjoining their use, perfectly destroys the last intention. Whereas Foods and differing Muffles of Wheat, Barley, Oat-mill, Rice, and such things may be so variously cooked, and sometimes so pleasantly acuated with Limons, Oranges, Citrons, or Pomegranates, that they may be by some means suited to most Palates, and condemned Small-beer no despicable nor ungrateful Liquor, or sometimes some pleasant Tincture of Roses, Barley Water, or Distilled Waters, from Oak Buds, or Barks, or Herbs of a moderate astringency ; for Physick some Preparations of
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red Roses, but not clogged with such immoderate quantities of Sugar as usual, or sometimes some pleasant Gas of Sulphur ; and several other things that seem grateful, and of a moderate astringency, varied to the liking of the Diseased, and sometimes altered to particular Indications. By such a method may be proposed these things, First, not to encrease the Symptoms proceeding from the Blood, and then being sparingly taken, they may not be so hastily thrown off, nor the faulty parts too plentifully supplied ; for the Circulation being, as I have formerly shewed, equal, these thus affected Parts will receive their proportion of Juices, and the more these encrease, the more the Blood must be poysoned from them, and of course the faster the Diseased must decline. A second may be that by the use of such mild Astringents, the extravagant discharges, by which the consistent parts must waste, may be somewhat restrained, for by that means the Blood cannot so hastily throw off so much of its parts. For I take it to be the most undoubted effect of such, *viz.* Astringents, to hinder separations, by as it were tying together the parts of the Blood. And a third may be that by parity of Reason, as they hinder Se

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parations from the Blood, so they may in some manner foreclaufe or prevent the admitting and receiving so readily such extraneous Parts into it, by which such Symptoms were occasioned. Not that it can be expected these can be of any happier efficacy towards the curing the Diseased, but that they answer to the two proposed intentions and seem in my thoughts to go farther than the former methods; which seem to me more to unloosen the mixture of the Blood, and so more to enlarge these preternatural discharges. A fourth and last is the use of Opiates, which quieting the Spirits, eases pain, sedates and composes inordinate Motions, hence the trouble of Coughing is for a time stopped, and restless and uneasie nights may be passed away in dosie slumbers. A Charity therefore to administer such blessings to those as are so miserably wasted in Body, and uneasie in Mind, not that such can contribute any thing to the cure of the Disease, but give a sort of respite to the troubles attending the Diseased. Thus far of Consumptions proceeding from some extraneous Matter, made, separated and collected in the Lungs.

XIII. But by reason a Cough is usually a foregoing Symptom, and always an inseparable Attendant to this deplorable Disease, I shall here, by way of Appendix to this Chapter, cursorily enquire into the several causes of it, and so by way of inference from them conclude what Method of Cure they severally seem to require. But the better to render this clear, it will be necessary briefly to repeat what hath been formerly prov'd, *viz.* That a Cough is a violent and preternatural Motion of the Organs appertaining to respiration; whatsoever therefore can put these into such inordinate Motion, may cause Coughing. Now it is most apparent, all Organical Parts, by Nature adapted for Motion, may fall into disorderly or preternatural Ones from two very different Causes; First, Either immediately from some Hurry, Tumult or Disorder, began amongst the Spirits themselves, the only Instruments of all such Motions, as hath been already shewed in Diseases of the Spirits. Or, Secondly, Where the Spirits are someways so affected, irritated or solicited into such Motions from some external, incongruous Matter, by the

means of the tender and sensible Fibres or Membranes where they reside, and so are by that stimulated into disorders. As to the first of these being a Disease proper to the Spirits, which hath been handled in the preceding Section, I shall therefore pretermitt the farther prosecution of it, and only refer my Reader to what hath been already said upon that Subject. And shall here only apply my self to the latter, which although it may be effected by very differing causes, yet I shall for Methods sake endeavour to reduce them to some general Heads, under some of which they may be comprehended.

As, First, Under such where Coughing is occasioned by an irritation from some unusual or incongruous Matter, in or about the *Larynx*, *Trachea*, or the Parts some way appertaining to them ; and this being commonly separated thin, and so descending or distilling downwards, is called a distillation, or, according to the *Greek*, *Catarrhus*.

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Or, Secondly, Under such as are caused by somewhat separated in the Lungs themselves, and this is usually thick Phlegm, and is frequently to be observed in ancient People, as likewise in such as are vulgarly termed Phthifical.

Or, Thirdly, Under such that are occasioned by any extraneous unnatural Matter, made, collected or contained in a proper Cyftis, in or about the Lungs, which at sometimes pressing or some way affecting, or being uneasie to the neighbouring Parts, irritates them into Coughing.

For as to Coughs proceeding from Inflammations, as in Pleurifies, and such like, or from Matter at large, as in Consumptions, or from Water, as in Dropfies, or indeed such as are only dependant upon some other commonly known Disease, I shall here pass them over, and only touch at such as are considered as an entire Disease.

XIV. The first of these sorts are ordinarily caused, and the second either caused, or often encreased by the alterations in the circumambient Air, and
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so are the common Effect of what we call taking cold. Which I shall here endeavour to explain from what may be observed of it, what it is, and how it can or must be effected in a humane Body.

The Air, by which I understand that Fluid in which we live and move, and without which we cannot preserve our Beings, being so absolutely necessary to life, that it cannot subsist without it : And the Air in this our *Britain*, is incident to a great variety of changes, some of which are great and sudden, and are immediately perceived by us, as those in its most sensible qualities, thus it is naturally sometimes hotter or colder, moister or drier, by which uncertain and unequal Alterations, our Bodies become differently affected, our Bloods sometimes disordered, and often disposed to unusual Separations, as must be concluded from the Effects to be observed in our Bodies succeeding to them. But how, or in what manner these are produced, does not so readily appear. This only is to be observed, that a due consideration had of what we know as to our own Bodies, and what we have learnt from other things,

things, that these unnatural Changes and Separations must proceed from some of these reasons.

First, Either that the thus altered Air being admitted in inspiration into our Lungs, being now so different, must some-ways differently affect the Blood.

Or, Secondly, that it being so much changed, the cutaneous Pores are from thence occluded, so that perspiration may be somewhat hindred.

Or, Thirdly, The Cutaneous Fibres being differently affected from the so altered Air, may someways contract, and thereby give some hinderance to the Motion of the Blood to the Surface.

And that even this is not an improbable reason, I shall appeal to any one who will but observe in cold Seasons, how not only our blood Vessels near the Surface, that are contiguous to the Air, but even our other consistent Parts, manifestly contract and appear less in such Seasons, and how warmth will cause them immediately to dilate and expand; and then if the Blood is thus hindred

hindred in its Motion to the Surface, it is plain it must flow in greater quantities inwardly, the Circulation being continued equal ; and the Secretory Vessels in those Parts being thus largely supplied, and the Blood, by reason of the hinderance to its Motion outward being disposed for Separation : It is but natural that such Separations there, should be encreased, if not altered, and likewise some unusual ones made, and if such happen upon any parts appertaining to respiration, they then create Coughs, or, if in the Bowels, Loosenesses ; if by the Kidneys, large quantity of Urine, and this seems to be the reason why we may usually observe most Persons, and especially such as are often cold, to be for the most part more laxative in their Bowels in Winter, and likewise return more by Urine in cold than in hot Seasons.

But whether the so differing Effects produced in our Bodies, which we ordinarily call taking Cold, and are undoubtedly caused by the Alterations in the Air are produced, but by one, or all of the above assigned Reasons, cannot, I think, be well determined ; although I think it must be by some of them,

them, because there can be no other means whereby it can occasion them: And especially since what we observe in the Effects so well correspond with them. However, be it as it will, it is sufficient to my present purpose, that unusual Separations are created by it, and that if such are made about the Parts appertaining to respiration, they often sollicit them into that Motion we call Coughing. And if this proceeds then from such unusual Separations in those Parts, it is evident it is properly to be remedied by hindring such. And the hindring or preventing these Separations must either be done by the means of the Blood, from whence they proceed: Or by the Part where they are made.

If from the first, it must be either, first, from lessening the quantity of it.

Or, Secondly, By diverting the Separations to other Parts.

Or, Thirdly, By putting the Blood into such a state that it may not so readily separate.

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The first of these is performed by Bleeding, by which the Vessels being somewhat emptied, a quantity of the Blood being lost, and the stream perhaps a little diverted by the Operation, the affected Parts are not so readily filled, nor of Consequence cannot separate so plentifully, so that by this means some present advantage may be received by it. But by reason we rarely continue long without Food and Drink, and by such the Blood will be again supplied, and the Vessels filled ; unless there be some others Indication attending such a Cough, that seem properly to require it ; it looks to me but trifling to practice it ; by reason bleeding rarely if ever hinders Separations, but for the most part encreases them ; as I have formerly proved ; so that although by doing that some present relief may perhaps for the reasons urged, be received by it, yet they cannot be of any continuance immediately from that.

As to the second, the diverting or turning this Separation another way, we must to conceive right of this, consider, that the Blood circulating by virtue of
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an impulse received from the Heart and Vessels, must always run equally in proportion to the capacity of its Conduits through which it passes, unless hindered in any particular part, and then it must rush in greater quantities some other way; or unless when some particular part being by some ways so altered that it becomes more susceptible of it, and then being a Fluid and moved by impulse, it must pass in greatest quantity where it finds least resistance. So that then to divert or turn this Separation, we must someways change the stream or current of Circulation, by causing it to run with greater freedom into some other Parts, which it will do where it meets with least opposition in its course; and by this means the affected parts being defrauded of their usual proportion, the Blood running with more ease thorough other parts, that otherwise should have passed by these: And this may be done either with, or without Evacuation. All Evacuations performed by the Motion of the Organical Parts do necessarily bring the Blood in larger quantities that way, as I have shewed in Vomitings and Purgings, and therefore
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must make derivation from parts so affected: But by reason the Spirits, the Instruments of such Motion, are often much disordered by such Operations, and there being a Communication between the Nerves, subservient to respiration, and those inserted into the Stomach and Bowels, Coughings are sometimes increased by them; unless afterwards quieted by Opiates. Besides, these seem to bring the Blood, too much from the Surface, from which these Symptoms originally flow: And therefore it seems more natural and safe to endeavour to render the Circulation equal, by carrying it more to the Surface: So that these parts may be relieved that way. And to do this it is evident we neither want natural nor Artificial helps; the natural are such as remove the cause in the Air by which these troublesome Separations are supposed to be produced; and thus warmer Seasons or hotter Climates most effectually do it, as is often experienced by such that are in the Winter afflicted with Coughs and Catarrhs, but are perfectly delivered from them, by Summer Heats, or by Travelling into warmer regions. It is not Improbable but Artificial Heats, might perform
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the same, could they be contrived to be more equal and continued, and could they be attended with an open Air, Liberty, and scope for bodily Exercise: By reason they seem to answer all the former intentions, but this is not to be performed without great difficulties. There being but few Persons that Health, Business or Pleasure will permit to keep in such measures as this seems to require, scarcely therefore to be attempted, for indeed the inconveniencies in this way of remedy seem to exceed the troubles of the Disease. But some being impatient under these Coughs will not attend to slow Remedies, but have recourse to hasty and violent Methods, such as are Blisterings and Sweatings; by the first of these derivations may be safely, and are very often effectually made, in these Cases, for by them not only a serous Juice is discharged, but the blistered Parts being fretted and injured by them, the Blood seems to be allured and drawn that way; for, I think, all observations will plainly teach us, that whatsoever Heats, Inflammes, Vexes or Swells a Part, does by that, cause the Blood to move brisker thither; this, I think, is particularly confirmed in that rubbing or frictions upon a particular

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part, or any warm Application, whether of actual or only potential Heats, as immersing Hands or Feet in warm Water, or holding them to the Fire, or applying any Medicines of hot and fiery natures, all which bring the Blood in greater quantity to the part so used: As is evident by the turgency of the Blood Vessels, their readiness to continue bleeding, and by the intumescency of the whole part; and the Blood could not be brought in such unusual proportion this way, but that some other Parts, must at the same time, be defrauded of a moiety that they otherwise must have received.

But sweating, although it evidently evaporates the serum of the Blood, and although in that the Blood is impetuously forced and impelled to the Surface, a Cough may be sometimes remedied by it; yet this being effected in that the Blood is too violently whirled about in Circulation, by which means some of its thinner and watery parts strain and evaporate thorough the Pores of the skin, so that although by this Sweating the internal unusual Separations may be diverted; yet this violent and tumultuous Motion of the Blood, by which it is per-

performed, will disorder and confound the natural Separations by the Secretory Vessels, as every one may observe, that will but heed those, in or after such Sweats. And the whole Mass being by this means once put into such Confusion, may sometimes pass into so ill a state as may not easily be recovered. For the Blood being by that violence that is necessary for the procuring such Sweats, put out of its ordinary and quiet Motions, so that its parts are so confounded, that the regular Separations are disordered, as may be seen in fact they are by the Urine, Saliva, and such like. We cannot be assured that when this Evacuation is terminated, that the Blood and all its Separations will immediately return to their former, natural and quiet state: And it hath sometimes been unhappily experienced, it will not, by those who have unadvisedly used Baths, Hummings, or other ways of Sweating; who have by that contracted very unlucky Diseases. Wherefore I think never without great Circumspection to be used.

XV. But if we endeavour the Cure of this sort of Coughs by the third Intention, *viz.* By hindring the Blood

from running into these Separations, it must be done, either first, negatively, that is, by not ingesting such things as are experienced to be apt to continue these Separations, such as are in the general all small, thin and cool Liquors. Thus some have delivered themselves from these Catarrhs, by an absolute forbearance of all Liquids.

Or, Secondly, Positively, that is, in drinking only such Liquors, and that in a moderate quantity, as will warm and invigorate the Blood, as Sack, Sherry, or strong Wines, by which Separations are hindered ; or otherwise by taking such things as seem to cement the parts of the Blood, as some Astringents will certainly do.

XVI. But if we attempt the remedying a Catarrh by the part affected it self, it must be by the means of such things that can someways reach these very parts, whereby so to alter them that they may not permit such Juices to pass ; and these being about the Trachea nothing can come to affect them, but what can pass with the Air, that being the only Body that is admitted into those recesses, and that therefore must pass in the forms
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of smokes or steams ; and it is by this means that sometimes the fumes of some Gums, as Mastich, Olibanum, Benzoin, are found to be Medicines that powerfully stop Destillations ; the parts affected being so altered by these Fumigations, that they will not permit such Separations. There is another way internally of affecting the very Part, but that is not immediately by stopping the Separation, but only by hindring the Parts of being susceptible of an irritation from them : And this is only done by the use of Opiates, which quieting the Spirits, as I have formerly shewed, they are not so readily stimulated into Motion, and by that means these parts not being so often moved and exagitated by Coughing the separated Matter is not so plentifully discharged, and of consequence not being by that so often emptied, it is not received in such quantities as otherwise might have been, had they not been thus quieted.

XVII. As to Coughs comprehended under the second head, that is, such as seem to be caused from a thick Phlegm separated or made in the Lungs themselves, as may be concluded from what may be observed in the manner

labour and difficulty in breathing, as also from a sort of ratling or wheezing before Expectoration, and also by the great ease and relief by that discharge. All which seem plainly to indicate that such Matter comes from the Lungs. In this case two things seem principally to deserve our consideration the first concerns the Separation : The second the Expectoration of the Phlegm here produced.

The First, Concerning the Separation of this Phlegm, is, that Persons that are afflicted with this sort of Coughs, generally find them most troublesome in the Winter Months, this Matter being more plentifully generated in such, than in the hotter Seasons, which therefore it is probable proceeds from some of the reasons already assigned in Defluxions or Catarrhs.

The second is, that such Persons as labour under these Coughs are usually worst, being almost suffocated in moist or haizy weather or thick and crassid Air, which seems to proceed from some hinderance in Expectoration. Thus such Persons will often be almost choaked in *London*, and when but removed into the Country, will Expectorate freely,

ly, and breath with less difficulty. For the Lungs being the proper Organs in our Bodies for the reception of Air, must immediately partake of any sensible change in that, and whatsoever is discharged from them, is forced up by Coughing, by which the received and contained Air is so forcibly expelled, that it buoys and carries up thick Phlegm, which is there generated. So that when the Air, which is an assistant to this Evacuation, is so altered as to become a hindrance to it, this will not without great difficulty be performed. It is not very difficult to derive the reasons of this unfitness in such states of Air, to promote Expectoration from the known and certain properties of it, *viz.* Its spring, weight and thickness, but that not being material to my present design, I shall not tire my Reader with it. For by whatsoever cause the Air becomes unfit to promote or continue this discharge, it is evident if we intend the ease or relief of it; if it is by internal Remedies, it must be performed by the Blood, and such then can only regard the Separation of this Phlegm, and not the Expectorations of it, which is a work purely Organical. It is true, if this Phlegm

can be turned or diverted from the Lungs, or someways hindred from being there made, there then will be nothing to require Expectoration. But that in Persons where these Coughs have been of long continuance, is not, as I apprehend, feasible, for the Lungs being somewhat weakned, or at least altered, that is, this Phlegm having been used to be separated there, the Lungs having acquired a capacity or disposition to continue it ; wheresoever then the Blood is disposed to part with such Matter, they are befitted to receive it ; so that unless the Lungs themselves can be altered, this Cough will not be perfectly remedied, and local defaults, are not often cured but by local Applications, which these do not permit. It is true by other Evacuati-
ons derivations may be made from these parts, as sometimes by Bleeding, or perhaps by Vomiting or Purging, according to the Indications, but then these only regard the present Evils; for nothing can be exterminated but what already is ; and here in the present Case the Organ it self is supposed to continue in a state befitted to receive such Separations, whensoever the Blood is disposed to make them ; so that unless they are repeated as often as such
Matter

Matter is generated, such surprising Symptoms cannot be prevented by them, And these usually affecting such Persons whose Age, habit of Body, or other Circumstances will not safely admit of such weakening and vexatious methods, and especially when they so frequently and so uncertainly repeat, as they do here in *England* from the uncertainty of the Air, wherefore it may be better to have recourse to other Evacuations that are constant and permanent, such as Fontanels, and such like, by which if the Blood finds but a ready way of defecating it self, they become as sinks to carry off these troublesome Separations; and fewer of the Inconveniencies that may attend the former, if too often used, will accompany this. But if notwithstanding these or any other endeavours to hinder or divert these Separations upon the Lungs, they do return, as it is certain they sometimes will, and then not being to be removed, unless they can be discharged from the Part, and since the discharging it from thence by Expectoration, is an act merely Organical; all that can be done by internal Medicines towards that discharge, must be in some ways preparing or befitting the Matter, that it may be
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the easier thrown up by Coughing ; which being in the present Case to be performed by the means of the Blood, can only be by the disposing of it to part and divide from it. By reason when it is once entirely separated and thrown off from the Blood by these parts, it cannot farther be altered or affected by it, being then perfectly divided from it. So that if Matter separated upon, or by the Lungs, is not discharged by Coughing, it must proceed either from the unfitness of the Matter to be raised, or from the present situation of it, that it cannot be forced up by that Motion. Neither of which can be remedied by the Blood, because being separated from it, it is not in its power to remove or alter. So that whatsoever can be performed by Pectorals, that is, by Medicines supposed to have a power to ease those parts, or to contribute to Expectoration ; they being to be admitted into, and mingled with the Blood, in order to perform their Efficacies or Virtues ; they can have no effect here, unless they dispose or incline the Blood to this Separation ; the discharging of it when it is separated being solely performed by the Organical Parts. And it is from this reason we may observe Pectorals or Medicines easing Coughs, by help-

helping Expectations to be so extremely different in their most obvious and common qualities ; no one Simple or Composition that I ever yet experienced that was universally so, that is, to all Persons, and at all times : But seem only so as they are adjusted to the Tempers and States of Blood, whereby they dispose them the better to these Separations, which being so very different, it is no wonder that Medicines that appear of so different and even contrary natures, do sometimes contribute to the same end ; Thus sometimes Acids, Volatile Salts, Oils, Sweets, Bitters and Sulphurs, have been recommended as Pectorals, and have really been found so ; and yet some of them are of very opposite qualities. And thus bleeding in affections of the Lungs hath oftentimes very different Effects, for in those Wheezings, shortness of Breath, or difficulty in Breathing, wherein the Lungs seem oppleted and stuffed, in that the tenaceous Phlegm is not well parted from the Blood ; by Bleeding the Vessels being somewhat emptied, the Matter to be Expecterated , being divided and parted from the Blood, by reason that in its circulatory Motion not pressing now so forward, these separated parts are left more to themselves, and being so disunited they are the easier by Coughing

Coughing Expectorated, for we generally observe in these Cases, Expectoration succeeds the better by Bleeding. Whereas when such Symptoms proceed from any thing actually and perfectly separated and lodged in the Sinuosities of the Lungs, and so absolutely out of the reach of the Circulatory Motion: Bleeding is so far from being of any advantage to the Diseased, that it is marvellously injurious, as may be observed in Hydropical and many such Cases.

XVIII. The third general head, under which I have comprised Coughs, are such that are caused from somewhat extraneous, made, generated or collected in the Lungs, or in some parts appertaining to them, and is contained in its own proper Coat; which pressing or being some-way uneasie to the neighbouring parts, irritates them into Coughing: Now if this thus formed preternatural Part is but endowed with its proper Vessels, whereby it is fed, it is no more by any internal Medicine to be destroyed, than if it had been born with us, as I have formerly proved, hence Coughs proceeding from this, are never to be remedied. It is true, exacerbations may happen in these Cases, for the Blood being disordered may by reason of these Tumours be more solicited into Coughing,
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by which Separations may be encreas'd this way, and then such must be remedied by reducing the Blood into its former state.

Salivation.

S E C T. III. C H A P. VI.

HAVING thus with brevity performed what I proposed of the general nature of Diseases, by shewing what they are, and how produced (so far only as they can become knowable to us) and the probable methods by which they are to be remedied; It only now remains that I fullfil what I have promised in the former part of this Discourse, to say a word or two of Salivation. Which is an extraordinary and preternatural Separation, made, caused or effected by Mercury or its Preparations, from the Blood by the Salival Glands, and from thence discharged out of the Body. But in order to give us some light into the Nature and Effects of this Operation, we ought to observe how these Glands or Secretory Vessels that are the proper Instruments in it, are but secondarily affected by the Medicine, that primarily exerting its Power, Efficacy or Energy in the Blood it self, which appears evident.

First

First, In that these Vessels, *viz.* the Salival Glands, can be in no other ways affected by the Medicines that raise this Evacuation, but by the means of the Blood.

Secondly, By the manifest disorders it creates in the Blood, breaking, colliquating and dividing its parts, as may be collected from the preceding or attending Symptoms, by which it is put upon purging it self.

Thirdly, In that by virtue of this disorder it will not always discharge it self by these passages ; but will sometimes, according to the Temper, Constitution and Disposition of the Diseased, break out thorough other ways, and sometimes in very different manners, as in Gripings, Loosnesses, and such like. For although this Mineral seems to have a peculiar and natural aptitude to strike, wound, injure or someways alter the Salival Glands, as perhaps better passing from the Blood with these slimy Juices, as are separated by them ; yet this must be performed by the means of the Blood, by reason there is no other Juice whereby it can be conveyed thither, and by reason we often experience to our troubles that when we intend a Salivation, if the Bowels fall into Gripings and Loosness, so that the Juices by
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that means become diverted and turned from the Salival Glands, a Salivation will rarely succeed well, or at least will not without some difficulty be raised to discharge such quantities that way, as might have been expected, had this not happened. And yet sometimes by this, the Medicine hath performed its desired Effects.

Fourthly, In that although Salivations are actually raised, yet they may be turned or lessened by Purgings: By all which it is evident the Mercury first affects the Blood, and the Salival Glands, but secondarily, or indeed accidentally.

II. Mercury being observed to have this certain power to break, colligate or someway so to affect the Blood, as to cause it to separate, purge or defecate it self, and this it ordinarily does by a flux thorough the passages in the mouth, which continuing for a considerable time, as days or weeks, the Blood has leisure and opportunity by this means to purge and purifie it self, that is, that it may separate, divide from, and exterminate such poysonous, offending and disagreeable parts that it was tainted or disordered by. For it is plain, the powerful advantages that are received by this Evacuation, are chiefly owing to the long and uninterrupted continuance of it; and not from any thing

thing specifick to it. By reason Mercury hath been often experienced a Medicine of excellent use, where it has not been permitted to raise a Salivation: But hath still been carried off by Purging; and even here the benefits from it will be as it is repeated or continued. So that if we but heedfully attend to the real Operations of this active Mineral, we may soon discover that it is not to any peculiar or specifick power in Mercury or its Preparations, that they have to alter or destroy any latent Poyson, or peccant and offending Matter, but only meerly to evacuate them. For if they are given or applied in proportion, they will so disorder the Blood as to put it in a state of purging, fretting, or someways spewing out its parts (I do not say this will be always of advantage to the Diseased) for that must be as it is properly or improperly applied) neither will it be in the same manner, for that will depend upon the disposition of the Blood, and the aptitude of the Vessels, for *qua data porta ruit*, it will break out or pass where it meets with least resistance. But, I say, it will always someway so affect the Blood, as to make it spew out some of its parts. It is true, this will not be equally performed in all Persons, neither in the same quantity, nor by the same way. Yet, notwithstanding, this is the certain effect of Mercury, and what it will always have, if administred or applied in quantity,
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and but admitted into the Blood. For Mercury in its nature seems to be a Poyson, that is, it is contrary, and will be destructive to our Vital Being: And is only by regulating the quantity and methods of giving it, converted into a Medicine, and therefore being so disagreeable to our natures, it cannot continue long in our Bodies, but it will give some disorders, which being in the Blood first, as being mingled with it, it disposes it to various Separations which may be sometimes salubrious or dangerous, according to the course it takes in making them: Wherefore Physicians with great Caution and Judgment often direct them towards the Bowels by Purgings. And if the real Efficacies and Virtues of this Mineral, consists in that it really disposes the Blood to those Separations, and that by such it purges, defecates and purifies it self, that is, that it exterminates the peccant, offending or poysonous parts by them: It must follow that the happy successes to be obtained by its use, must absolutely depend upon the continuance and proportion of the Evacuations; for by such the Blood hath time and opportunity to do it. And not from any thing specifick in it, or in any of its Preparations. It is true, by preparing of it, its poysonous qualities may be laid asleep, or perhaps destroyed, at least they may be mitigated or lessened.

But then those its certain Powers, Virtues

or Efficacies, by which it only disposes the Blood to these Separations, and by which its happy Effects arise, which seem to be the main End in giving of it, must likewise be either destroyed, or in proportion lessened, by reason they proceed from these very qualities: So that then to attain the same effects by such Preparations, they must be proportionably encreased, or otherwise they cannot perform them; and then the question is whether they are not equally dangerous; for if they do not, it is plain they have changed their natures and so are no longer to be esteemed Mercurial. Besides, I never yet could observe any one Preparation of Mercury that was administered with real success, but it hath some-way more or less disposed the Blood to separations, that would be succeeded with some Evacuation, sooner or later, according to the power of the Medicine: It is true, that where they have been given in some small and trivial quantity, it hath not always been heeded, by reason perhaps such have been but little, or that they have been drowned or lost by intermediate Evacuations.

III. In a Salivation then where the Blood continually purges and purifies it self by discharging such quantities of Juices by the Mouth, and sometimes likewise by other passages, and during which, it hourly receives such supplies of thin and harmless Liquors, which readily running out at these
Vessels,

Vessels, must wash out and carry away peccant, offending or incongruous parts ; so that the remaining part of the Mass that continues red and circulates and is only called Blood, which keeps in its proper Conduits, and will not pass these Vessels, will become somewhat more Homogeneous and Agreeable, although it does not always follow in respect of the Man, that it is bettered (which are two different things) for Salivations are not always advantageous. And in this powerful Operation the Blood seems to do nothing uncommon or extraordinary, for it every day purges and fines it self by these and other Secretory Vessels and Passages, with this only difference, that the Blood by the use of Mercury is more disordered, broke or altered; whereby it is more disposed to Separations; and the Mercurial Particles being received into the Blood in such a proportion only, that they are able to create this disturbance, but not in such a quantity to destroy life, in hindering the Circulation, are again expelled by these Vessels, as being offensive and disagreeable to the rest of the Blood ; and in their passage here they someways wound, alter or injure these Glands, by which means they heating, swelling and enlarging, do give more liberty to the Blood to run this way : And the Pores or Passages of these being enlarged, by reason they are swelled, admit of larger quantities of these Juices to strain

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thorough them, by which means the Blood more powerfully defecates it self. And this is abundantly confirmed in that the success of a Salivation, in such Cases, where it is of real use, is always answerable to the height and continuance of it. So that in this the Blood seems to do no more than what is naturally performed in all fluids made up and compounded of different and unlike parts, for such being left undisturbed, will sooner or later fine and purifie themselves (and this may be hastened by Art) that is, they will by a Motion natural and congenite to them, part, divide, separate or expel their incongruous and heterogeneous parts, which Motion may likewise be intended by the admixture of some disagreeable body with it, and thereby its separations hastened and encreased. With this only difference that such being quiet and free from an external impulse, act in their own natural way, and so despume themselves by juggling and tumbling the unlike parts to the top, bottom or sides, according as they seem befitted, according to the laws of *Hydrostaticks*. But the Blood being hindered in this by the Circulatory Motion, by which its parts are continually blended and confounded together, that there is neither space, leisure or opportunity for that performance; yet does it by the Secretory Vessels, which are so excellently fashioned, as readily to let pass such parts as are
useless

useless, unnecessary or hurtful to the Blood; although some of these Vessels serve for other Ends. And when a Secretory Vessel becomes pained, inflamed and swelled, it seems to be more susceptible of these Juices, the Blood being called in greater quantities that way, (as appears probable by the unusual pulsations upon such parts,) and then being disposed for separations, it may the better by this operation deliver it self from all offending Matter.

IV. Whereas in other Evacuations, such as Vomitings or Purgings, which being performed only by the Motion of the Organical parts, whatsoever is evacuated by them immediately from the Blood, must be brought into the Bowels, by that very Motion of them, in which alone they consist, and therefore can be of no longer continuance than that Motion is; the Blood being only forced to separate that way by that their Motion, and not by any internal disturbance in it, made by the Medicine, and therefore such never out-live that, as will appear most evident to any one who will but impartially consider or observe them. However, if we but reflect upon the nature of our own Bodies, it will plainly be found impracticable so to continue these as to make them answerable in their effects to a Salivation: For should we suppose the Blood to be equally disposed to part with its peccant Matter

Matter by these ways as by the Salival Glands: Yet such Matter being diffused through the whole Mass, the Blood could part with no more of it during such Operations, than what could be separated by the Vessels about the Bowels in that time, for what was not there could not pass there; and if we but weigh what Juices during the short time of such Operations, in proportion to the whole Mass, can there pass, and what moiety of noxious Matter with them, we shall easily collect why Salivations must be in some Cases the most powerful, as it is the most lasting. Besides the parting or separating of offending parts, seems to be a leisurely act, being rather hindred than assisted by such violence as is requisite to those Evacuations, and to continue these seems unpracticable, by reason our Bodies are so constituted, as to require a daily supply of new Juices for natural uses, which must pass into the Blood which they could not well do should Purg- ing or Vomiting be so continued; by reason they would constantly discharge such, so that although we should eat and drink yet our Bodies being thus defrauded of all nourishment might starve. Whereas in Saliva- tions what we take passes into the Blood before it can be again by that discharged, so that our Bodies may receive some be- nefit by it, and be delivered from those inconveniencies that attend the other, which
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are also in their very natures impracticable to be thus continued.

V. In short, Salivation being nothing in nature but the effect of a mighty separation made by the Salival Glands occasion'd by Mercury or some of its Preparations, which being in its nature highly disagreeable to our Blood, will some way so marvellously disorder it, as to cause it to purge, divide from, and throw out several of its parts this way: By the means of which such Peccant, Morbifick or Poysonous Matter that was latent in the Blood, and will associate and pass off with these Juices, is likewise exterminated with them; and this Operation being so very lasting, the Blood has thereby time and opportunity to free and extricate it self from such offensive Matter, and that this is what Mercury really performs in our Blood, appears abundantly manifest in that if the quantity of it be too much enlarged instead of a Medicine, it becomes a Poyson, that is, instead of curing it destroys, for the Blood being disorder'd, and over-powered by the quantity, being unable to purge and despoil it self by these or any other passages, it swells and expands in its own Vessels by which means its Circulation becomes gradually hindred, and at last suppress'd, and then the Diseased dies. And thus the effects of Mercury are and must be as the proportions are adjusted (not that

that all Bodies will be equally affected by the same quantity) for if it be too sparingly administered or applied in such cases as really deserve its use, it does too little, as not disordering the Blood enough, whereby it may be empowered to defecate or purge it self. But if in too great a quantity it does too much, for then it puts it into such a state as it cannot.

F I N I S.



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